POPULAR SCIENCE

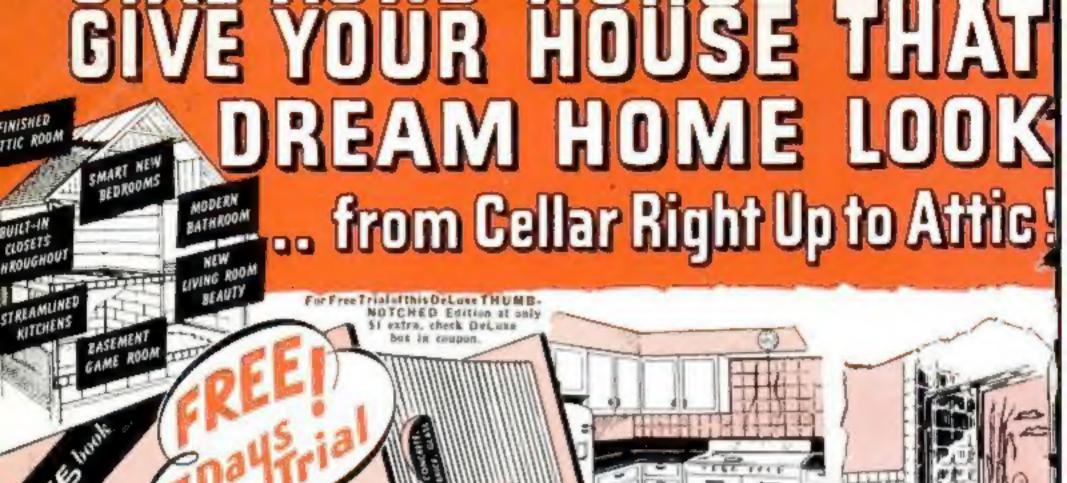
MONTHLY

MECHANICS - AUTOS - HOMEBUILDING 🛠

How You'll Get

Best Christmas Toys You Can Build PAGE 179





Amateur Builder's HANDBOOK Hubbard Cobb

You'll be the here of the hour when you build this Streamlined Kitchen every waman dreams about, with the help of this book!

You can easily grace you hame with a medera stunning Heliywood Co

MORE THAN 1,000 "How-to-Do-It" Pictures! (Charts, Tables, Sketches, etc.) 300.000Words,512Pages of Room-by-Room Ideas by Famous "Handyman"

Hubbard Cobb



Ideas on uning place 16 blacks come glamer. for lighting!

Dreost Like Hoving Books in ONE!

1. Concrete, Masonry, Bricks, Glass 2. Rough Carpentry, Nouses, Rooms 3. Millwork, Windows, Boors, Screens, Floars 4. Roofs, Insulation, Ventilation, Reating , Interior Finish, Plaster, Linoleum, Tile, 8. Plumbing, Heating, Fireplaces, Chimneys

7. Tools, Hardware for Your EVERY Need 1. Paints, Varnishes, Sprayers, Brushes 9. Electrical Wirley, Fixtures

and Many Other Features!

CONCRETE MASONRY, GLASS, BRICKS

Shower Stall Water-prooding Correcting Sagging Wall Glass Block Doorways Walls Concrete-Pouring Methods Tools Wood Frames.



Flanhing shown here is one hundreds of reeffing (saturan)

Brick Vencer Arches Doorways Partitions. Patterns In Bricklaying Concrete Ma onry Walls Brick Facing

CARPENTET

Lumber-Standard Measure-Lamber Delects-How to Recognize Reof, Nailing Wall Bracins Partitions Wood Plywoods Fences Stairs Ouldoor. Cellar

Kitchens-Plans

and Dealsna

MILLINGRIC, Concrete 5 eps WINDOWS DOORS, SCREENS, /LOORS

Woods for

Woods for

Terms.

Exterior Trim

Woods for Porches

Interior Trim Woods for Siding

Rafters, Layout

Repairing Interior Walls Terrace, Purch

Construction

Maw To shetches them you EVERY lyav of just you !!

over need:

Ploors-Nailling Laying Finish-Eddings Doorways Storm Windows. Thoors. Shelves, Cabinets Adjusting Doors Built-In Parniture Bathroom

Closets Working

Cabinets

Joming Roof to

ROOFS, INSULATION, VENTILATION,

PLASHING Installing Flashing Dia-grams lastructions, Valleys. Chimneys, Rips, Windows, Door-Says, etc. Vices of Insulation

Insulating Parm Buildings Types of Shingles, Walls Roofs Him Radges etc. How To How Not-

To Ideas Tips on Repairing. Replacing Loak in Old Roofs Reading Instruc-

TACKER PLASTER, LINDLEUM THE

Tilleboords Repairing Walls Tile-Laying Tips Wall Plaster Mixing Exterior and Interior Walls Door Wladow Openings Trims Wall Board Installation



Here Is a Mere Glimpse of Immense List of Contents:

1001 Money-Saving Ideas on EVERY Phase of Home Improvement

You not countless. wireng tacts such as installing outfels, even an com-

Linoleum Laying Lifetime Wall Coverings Repairing Ceilings Les alling New Cettings

Making Rooms Wilder

Installing Ceiling Fanels

HEATING, FLUMBING CHIMNIEYS

Building Fireplaces Plumbing, Pipes of All Klods Faucet Installations Coal Bins Construction Figures Tubs

Show How YOU Can Have the Luxury Home You've Longed for! Chamber Construction Hat Water Systems Making Woods Fire-Resistant

PAINTS.

Spots. PROBER Color. Decorating Tips Types of Pinish-When, Where, Whitewashing, Ingredients Painting Wood Floors Paints for Brick. Concrete Plaster

TOOLS, NAILS, HARDWARE

Scalfolds Ladders Use and Precautions Stiding Windows Latches Screens-Repairing. Replacing. Construction. Painting, Installation Bolts Screws Nail - All types

EXCITING EXTRAS Construction of

Driveways Repairing Garden Hote Awnings Landscaping Lown-Roller, How to Make Maring of Heavy Items, Furniture

AND MUCH MORE!

and Sizes

ELECTRICITY Salkthes

Sinks Showers Saring on Fuels Duples Bathrooms

Bells, Chimes Lamps. Types.
Hest Placing
Low-Voltage Wit-VARNISHES Tinting BIR Cleaning Paint Floor Scalers Decorating Old

Approved Lubels

Individual Room

Kitchen Outlets

Heating

Thermostats

ALL types of efosets for kitchens, halbrerms. rasme, elc.

PLUS ALL THESE

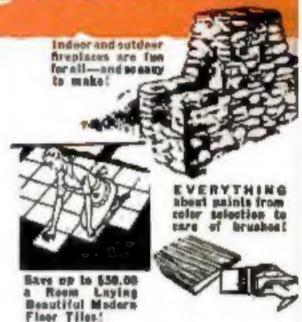
Amazing ALL-NEW 9-Books-in-1-Volume Helps You SAVE Many Thousands of Dollars—Increases Your Home's Value!

00 Ideas for Streamlining Kitchens • Built-in Closets • Extra Bathrooms • Heating Systems Converting Attics & Cellars • Modernizing EVERY Room!

CICTURIZED Step-by-Step Instructions Show You How!

ON'T put off those vital home repairs and improvements another day! Whether you want a sunny Streamlined Kitchen, a cosy livable Attic Study or Playroom, a new Driveway, a cheery Indoor or Outdoor Fireplace, or ANY OTHER luxurious improvement imaginable—all are now within your grasp, FOR THE COST OF MATERIALS ALONE—with the aid of this amazing, all-new "AMATEUR BUILDER'S HANDBOOK"!

More than a book—it's almost like having 9-Books-in-One! A big volume of room-by-room instruction for modernizing ANY home—a complete handbook on EVERYTHING the average home-owner wants for ALL 9 handyman trades! 512 BIG PAGES—Over 1000 "Show-How" Illustrations—Over 300,000 clear, helpful words! Fingertip reference on 1,001 ways to save money—on fuel, insulation, plumbing, landscaping, roofing, painting, wiring—and more!



Indoors or Outdoors—Cellar to Attic—Porch to Kitchen—EVERY Modern Improvement You've Ever Desired, Fully Described and Illustrated!

THE money this giant book SAVES you can provide your family with those luxuries you've dreamed of! And, at the same time, you'll be modernizing, beautifying, even building a home to thrill your wife and amaze your neighbors. Imagine building that atreamlined, completely modern Dream Kitchen and Hollywood Bath every woman yearns for! Install your own Heating System—build your own Stoker Bin! See NEW ways to get longer life out of house-

hold equipment. NEW ways to save on fuelgiant Heating Section alone may save you hundreds of dollars!



One of 6 simple steps showing you how to get perfect re-reeling—at his savings?

Save TIME—Save MONEY in Building or Remodeling ANY House!

From fixing leaky faucets to complete modernization, you get all picturized directions! Step-by-step illustrations, easy-to-follow text show you how to give your family a comfortable, spacious home that will be the show-place of your town! SAVE up to 70% on cost of insulating! Build all types of closets and cabinets, for the cost of materials alone! Give every room better lighting—and much more!

FREE

64-Page Book-124 Pictures



Big 51/2" x 81/4" size book. Shows how to make 101 valuable toys, gifts, home and garden furnishings, etc.—Including wall desk, work bench, tool box, wastepaper basket, photograph enterger, sand box, garden bench, trollises, corner shelf, drap-leaf table, cabinet, child's chair, book case, scores more! Simple 1-2-3 directions! Enjoyable, maney-saving heibby! Yours FREE even if you return "Amateur Builder's Handbook" after full week's FREE Trial. Mail caupon below AT ONCE!

SAVE \$1.00 DISCOUNT Mail FREE-Trial Coupon NOW!

Pay Miracle \$295 Low Price of Only 2 st you decide to know lit

BEFORE you even think of buying this book on 9 Handyman Trades, test it a full week FREE! If not convinced this amazing ALL-NEW "How-To" book will help you SAVE at least \$100.00 every year, return it and owe nothing! Otherwise, keep it and remit only \$1 monthly, until the miracle Discount Price of only \$2.95 plus postage is paid.

But you must act NOW! Rising costs of paper and printing may soon compel us to go back to original plauned price of \$3.95. Avoid disappointment; enjoy \$1.00 Discount, claim your capy before it's too late! SEND NO MONEY—mail FREE-Trial Coupon NOW! wm. H. Wiss & Co., Inc., 50 W. 47th St., N. Y. 35, N. Y.

Rush FREE-Trial \$1.00 Discount Coupon NOW!

Wm. H. Wise & Co., Inc., 50 West 47th Street, New York 36, N. Y.

Without obligation to me, rush me prepaid for PREE Trial the all brend-new "AMATEUR BUILDER'S HANDBOOK"!

After 7 days' FREE Trial, I'll return book and owe nothing. Or, if convinced this amazing Giant Book may save me \$100.00 a year or more. I'll keep it and remit NOT \$3.95—but only \$1 monthly until miracle Discount price of only \$2.95 plus postage is paid.

FREE GIFT! In either case, valuable 64-Page fully illustrated "101

SAVE SHIPPING CHARGES! Send only \$3 now and we will stand all packing postage and insurance costs. Same return privilege and refund guaranteed.

MR. MRS. MISS	}-	************			******	(P	LEASE	P	RINT)		Intitum	58
ADDR	ESS.					****			TETTTE TO MANAGE PM ANA LIN		801	14
CITY		************							STATE		1444	thetes
	HECK	HERE	ia.	160	De	Luxe	Edition	n.	THUMB-NOTCHED.	fo.	Morne	-035

Grained binding. Only \$1 extre. Some return privilege and terms,

America's Leading New-Idea Magazine for 81 Years

Founded 1872, Vol. 163: No. 5



Mechanics and Handicraft 180, 94, 94, pp.

VOLTA TORREY, EDITOR • Howard Allaway, MANAGING EDITOR
Howard C. Jensen, art editor • Frank Rowsome Jr., assistant managing editor

mesion entrouse Harry Walton (Mechanics & Handicruft), Hartley E. Howe (Features), Martin Mann (Copy).

Henry B. Comstock, Devon Francis, Sheldon M. Gallager, Kendall W. Goodwyn, Wesley S. Griswold, Herbert O. Johansen, Herbert R. Pfister, Robert P. Stevenson, Ruth Westphal. ART: Harry Samuela (Director), Herbert Anthony, Eric Karminski Jr., Frances Cooper Daniela, Mary Dec. PHOTOGRAPHY: W. W. Morris (Director), Hubert Luckers, Orango and Com-

Louise Levis, Trudie Ray, Teresa Robbins, Grace A. Schwartz, Georgette Sparks.

MIDWESTERN EDITOR: Kenneth Wylie (Chicago) . MESTERN EDITOR: Andrew R. Boone (Los Angeles)

NOVEMBER, 1953

Gus Wins a Thanksqiving Dinner



They had bagged the season's biggest back, Problem: how to get it down the mountain—in a jeep that wouldn't start. Salution: call Gus Wilson at the Model Garage, Details: see p. 196

Wilbur Shaw Drives the '54 Chrysler 95
Can We Predict Earthquakes?107
Today's Pirates Sail the Highways114
How You'll Get TV Colorcasts
Moon's Mysteries Challenge Spacemen126
Glaciers Give Tomorrow's Weather 140
Grand Champion Model T Story146
He Makes the World's Smallest Drills152
An Atomic Dragon's Eerie Funeral163
You'll Have Power Steering and Like It169
The Best Christmas Toys You Can Build179
How to Super-Snoop on Borrowed Light 191
Why, What, Where and How of Insulation 205
Wrought-Iron Furniture Easy to Build214
820 Tester Spots Faulty Tubes221
Quit Skidding! Build a Sander230
Plywood Back Rest Turns Bed into Sofa24
Building Dining Rooms for the Birds252

(More features and departments are listed on page 4.)

Godfrey Hammond, FUBLISHER . Stephen P. Gleunon, ADVERTIRING DIRECTOR

ADVERTISING OFFICES: NEW YORK-353 Fourth Ave.; CHICAGO-360 North Michigan Ave.; DETROIT-820 Book Bldg.; SAN FRANCISCO-681 Market St.; CLEVELAND-328 Citizens Bldg.; LOS ANGELES-2350 Beverly Blvd. EDITORIAL OFFICES: 333 Fourth Avenue, New York 10, N. Y.

Published monthly at 351 Fourth Atomic, New York 10, N. Y., by Popular Science Publishing Co., Inc., Godfrey finamond, Press, dept and Treasurer, R. C. Wilson, Stephen P. Cleason, Vice-Presidents J. W. Briggs, Secretary, Emercias second-class matter Boc, 28, 1918, re-entered as second-class matter July 20, 1948, at the Post Office in New York, N. Y., under the act of March B. 1879, additional entry as second-class matter at Dayton, Ohio, Entered as second-class matter at the Post Office Department, Capada, Printed in U.S.A. Copyright, 1924, by Popular Science Publishing Co., Ioc. All rights reserved in the United States, Great Britain, and In all countries participating in the International Copyright Convention and Fan American Copyright Convention, Yearly subscribing to United States, its paragraphous and Canada, \$3.00 to 2 years \$7.50 to foreign countries \$1 per year extra, Four weeks' notice is popled to chapter a subscriber's address, Picase give both and new addresses, including postal to be numbers.

Chrome



is where the heart is!

Yes, the heart of any
engine is the piston and rod
assembly...and Perfect Circle's
2-in-1 chrome piston ring set
gives complete protection
against wear where the
power is produced!

No chrome piston ring set can really give complete wear protection in the "heart of the engine" unless it provides a chrome-plated TOP ring, as well as a chrome-plated oil ring. For the top ring operates where heat is highest, pressure is greatest, and lubrication is poorest!

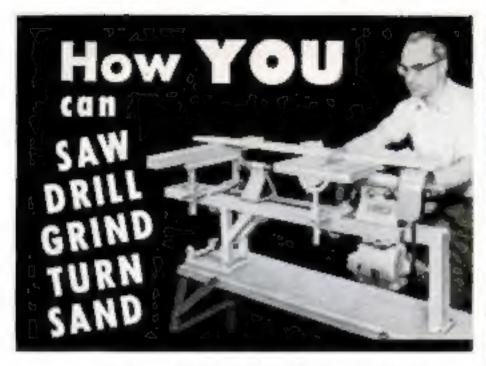
That's why Perfect Circle's 2-in-1 chrome piston ring set has established new standards of ring performance... why it seals compression and controls oil for over twice as long as old style sets! And only 2-in-1 furnishes an alternate HiPressure spring with each oil ring, for positive control even in badly worn engines!

Parfect Circle Corporation, Hagerstown, Indiana; The Perfect Circle Co., Ltd., Toronto, Onterio.

Perfect Circle

PISTON RINGS . The Standard of Comparison

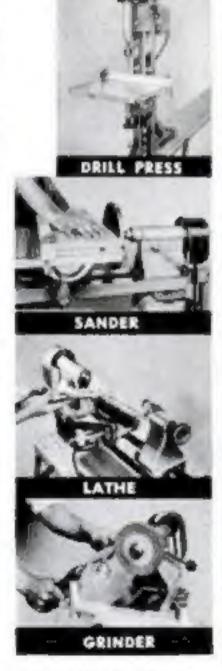




with SUPERSHOP

5 BIG POWER TOOLS IN 1

When you DO-IT-YOUR-SELF with SUPERSHOP you save money and you have fun. You can build a house or a garage — handle BIG jobs. The 8 inch saw cuts 21/2 inches deep. Heavy tubular steel frame, 100% Ball Bearing. Lifetime accuracy. Save \$65.05-buy direct from factory. Take advantage of our FREE trial plan. You can buy on EASY TERMS. Write for FREE How-To-DO-It Catalog.



Write for FREE How-To-Do-It Catalog.

WRITE FOR YOUR COPY SEND POSTCARD FACTORY TO YOU EASY PAY PLAN

POWER TOOLS INC. Beleit, Wiscensin

253A Yotes Ave.,

News and Pictures

'54 Plymouth Offers Power Steering	104
Hot Atoms Gauge Snowfall	
Clothes Make the Man	
New Sights in the Sky	
Practice Makes Perfect Pictures	
Sailors Get More Room on Destroyer	136
Family Rides Own Cable Car	150
What Are You Passing Now?	
Super Hot Rods	

Mechanics and Homebuilding

How to Get Two Boards Out of One 18	16
Wordless Workshop18	38
News in Home Heating19	_
Corner Unit Houses Washer	
New for Your Car19	15
What You Can Do About Condensation21	0
New Work Horse for Cameramen21	3
One-Evening Shop Projects25	50

Departments

Letters	12
New Ideas from the Inventors	181
I'd Like to See Them Make	161
P.S. Last Minute News and Notes	178
Hints from the Model Garage	199
New for the Handy Man	201
Keeping the Home Shipshape	203
New Tools	226
New Shop Ideas	236

NEXT MONTH . . .





Installing a seat belt in your car not only will keep you safer; it will make you a better driver, too, Because it gives what fliers know as a "seat of the pants" feel, you sense an impending skid or softening tire before it causes trouble. E. F. Lindsley will tell you about this, and offer installation tips, in the December issue.

Caprolled Internal

CAN YOU BELIEVE WHAT THEY SAY ABOUT A



Read these facts:

Some people will tell you that I.C.S. coupon brings "Good Luck." They base this on results. In many cases, men and women report pay raises, promotions and important "breaks" soon after they mail the coupon. In one 90-day period, I.C.S. received 1973 letters from students who had won promotions and more pay. No wonder the coupon has a reputation for being LUCKY.

Is it really LUCK?

Of course not! There are good reasons for these successes. You can prove it for yourself. Just mark and mail the coupon below.

The very fact that you are taking definite action sets you apart from others, puts you in a league with I. C. S. leaders like Rickenbacker, Chrysler, Le Tourneau, scores of others. You immediately feel more confident, more sure of yourself.

You get free, expert guidance

By return mail you'll receive a large illustrated catalog with information about the career of your

choice and interesting facts about I.C.S. You'll also get the free, 36-page promotion manual, "How to Succeed." This gives you valuable tips about how to choose a career...how to apply for a job ... how to get a raise. These books account for much of the "luck" you hear about; they have helped thousands of men and women.

Double your income by 1963

The most spectacular results come from those who enroll for L.C.S. courses. Recent reports from ten-year I. C. S. graduates show an average increase in income of 103%! Before they enrolled, these men were clerks, apprentices, junior accountants. Today they are supervisors, foremen, chief engineers. Match this average, and you can double your income by 1963.

Courses are sound, practical, easy-to-follow. You use your spare time and set your own pace. No interference with job or social life. Diplomas to graduates. Surprisingly low cost. Get all the details. Mail the coupon today!









CENT STAMP ON MY FUTURE







INTERNATIONAL CORRESPONDENCE SCHOOLS



	BOX 766	2-N, SCRANTON 9, P	ENHA,	
Without car	at or obligation, made my "HOW to	SUCCEED" and the backlet abou	d the course BEFORE which I have	marked X:
ART Commercial Art Magazine and Book Illustrating Carteoning Show Card and Sign Lettering Fishion Illustrating AUTOMOTIVE Automobile, Mechanic Auto-Elec. Technician Auto Body Rebuilding and Refinishing Direct Gas Engine AVIATION Aeronautical Enginemist Aircraft Engine Mechanic Caronautical Engineering Buf L DING Architecture Arch Drafting Building Contractor Estemating Carpenter and Mill Work Carpenter and Mill Work Caronautical Engineering Reading Blueprints House Planning	Heating Steem Fifting Air Conditioning Electrician BUSH ESS Business Administration Certified Public Accounting Bookheaping Stengraphy and Typing Secretarial Federal Tax Business Correspondence Personnel and Labor Relations Advertising Relaif Business Management Managing Small Business Sales Management Chemical Engineering Chemical Engineering Chemical Engineering Chemical Engineering Chemical Engineering Petroleum Nat'l Gas Faty and Paper Making Business Pating Paper Making Business Pating Paper Making Business Pating Paper Making Business Business	☐ Mechanical Drafting	College Preparatory Nathematics Commercial Good English MECHANICAL AND SHOP Mechanical Engineering Industrial Engineering Industrial Supervision foremansing Mechanical Drafting Mechanical Drafting Mechanical Drafting Mechanical Drafting Mechanical Design Industrial Implementation Mechanical Implementation Mechanical Implementation Mechanical Mechanical Design Industrial Implementation Mechanical Mechanical Mechanical Mechanical Design Mechanical Design Mechanical Design Mechanical Design Desig	Stationary Staum Engineerin Stationary Fireman RADIO TELEVISION COMMUNICATIONS General Radio Radio Operation Radio Servicing—FM Television Electronics I plephone Work RAI L HOAD Lucomolive Engineer Diesel Lucomolive Air Brakes Car Impacts Railmand Administration TEXTILE Textile Engineering Cotton Manufacture Rayon Manufacture Rayon Manufacture Stoom Fixing Finishing and Dyving Tuxtile Designing YEAR OF THE SIX MILLIONTH STUDENT
Marne		Ago Nome Add		
Othy	Zone State		Warking Hours	A.N. toP.N
Decimation			in rates to maintees of the Armer atroducial Correspondence School	

Copyrigment interest.

GOOD NEWS! THIS BEAUTIFUL

VINYL-PLASTIC TILE FLOORING RESISTS GREASE, ACID, ALKALI

YET COSTS YOU LESS!

ARISTOFLEX

The New Low-Cost Tile Flooring Made of Vinyl— The Wonder Plastic!

Costs Less To Begin With! Aristoflex-in economical standard gauge - is produced especially by MATICO to meet the needs of homeowners everywhere. It resists dirt, grease, acid and alkali... stays sparkling clean with occasional damp moppings . . . is quiet and comfortable underfoot . . . comes in 13 radiant Coronation Colors . . . lasts for years and years. Best of all, Aristoflex costs less than any other flooring of comparable quality ... gives you far more for your money. See Aristoflex at your friendly MATICO dealer - he's listed in your local classified telephone directoryl



ARISTOFLEX yourself SAVE STILL MORE!

Yes, you can save \$25, \$30 or more on every room by installing Aristotlex yourself. It's easy, too, with MATICO's tested install-it-yourself method—special too! kit—and illustrated instruction booklet And you can install Aristoflex in any room from basement to attic because it's rugged vinyl-plastic throughout—There's no felt backing to wear off or deteriorate.

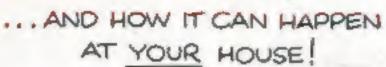


MASTIC TILE CORPORATION OF AMERICA

> Member: Vinyl Flooring Institute Joliet, III. * Lang Beach, Calif, Newburgh, N. Y.



Christmas sicture in 60 seconds





SNAP IT/

... with your brand new Polaroid Land Camera

60 SECONDS LATER ...

THE FUN BEGINS!



You open the back and lift out a beautiful, finished picture. The family crowds around to admire it. And when friends come, you show them the wonderful pictures you snapped that very morning.

NO WONDERING HOW THEY CAME OUT!

No need to waste film making extra shots — just to be sure. If the subject moves or the pose isn't right, you know at once and can shoot again before a once-in-a-lifetime picture is lost forever.



directly from your prints by Polaroid's special process.
They'll come back to you so quickly and cost so little, you'll wonder why you ever kept dusty files of negatives.



HAVE YOU SEEN TODAY'S POLAROID PICTURES?

- They're big, sparkling black and white prints like this.
- A new plastic finish gives them lasting beauty.
- Every roll of film is guaranteed.*

YOU'LL HAVE A LIFETIME OF FUN

On vacation, you'll have your pictures as you snap them—to show new friends, to mail right off, to jot names and dates on the back. At any get-together, you'll add to the fun with 60-second pictures.



See your photo dealer soon — while he still has Polaroid Cameras on hand for Christmas. Ask for a demonstration. You'll be amazed how easy it is to load and use—how sharp and clear today's 60-second pictures are.

pathfinder — f/4.5 lens . . . shutter speeds one to 1/400 sec. . . . coupled rangefinder . . . the aristocrat of 60-second cameras.

MODEL 05 — the thrifty family camera anyone can use indoors or out, rain or shine.

*If you're ever dissatisfied with the results from any roll, send the pictures to Polaroid and you'll get a new roll free.



POLAROID Land CAMERAS

Model 95

Palaroid Corporation, Cambridge 39, Mass.



Don't put in a drop of anti-freeze...

UNTIL YOU'VE CLEANED OUT RUST WITH

DU PONT Cooling CLEANSER



HOW RUST AND ACID CORROSION WASTE MTI-FREEZE... CAUSE TROUBLE AND EXPENSE



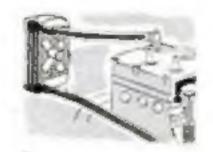
Accumulated rust, scale and corresion plug radiator passages. This slows down circulation, may cause leaks. Anti-freeze may leak out ... or "bell out" as moter overhous.



Acid corresion and rust take place in engine black, too. Orculation slows down, proper cooling becomes impossible. Motor averboats and couses "belling out" or creeping of anti-freeze.



Water-pump impeller blade is often attacked and naten eway by rust and correction. This courses feiture of circulation in cooling system and dangerous overheating.



The heater is also part of your cor's cooling system. Rust, scale and ocid corresion con impair its operation by claquing passages or destroying vital parts such as tubes.



BETTER THINGS FOR BETTER LIVING ... THROUGH CHEMISTRY Before you put in antifreeze, yourcar's cooling system needs a careful check-up.

Clean out rust and scale—safely, easily, thoroughly — with Du Pont Cooling System Cleanner,

Simply pour Du Pont cleanser in the radiator and run the motor. It works even while you're driving . . . dissolves rust so it can be drained out. No reverse flushing necessary. Neutralizer is included in each can to complete the

job. Insist on the original and genuine Du Pont Cleanser, marketed only by Du Pont in a package bearing the red Du Pont oval trade mark.

Ask about the complete Du Pont pre-antifreeze service at your service station today and assure trouble-free driving this winter. Or get a can of Du Pont Cooling System Cleanser at your auto supply store . . . \$1.25 at most dealers.

insure against leaks that waste anti-freeze with DU PBNT Cooling System SEALER

Even though your cooling system seems watertight, many permanent enti-freezes will "creep" through tiny pinholes. You can step this seepage immediately with De Port Cooling System Sealer. Simply poor it into your redistor, it can't clog or harm hose or metal parts.



December 2 Red

Dans not reques

Don't forget fuel line anti-freeze-Du Pont Gas Guard.



ON LAYOUTS

A practical, illustrated Encyclapedia covering all phases of Shout Motal Wark Including Pattern Cutting, Pottern Develop-ment, and Shop Procedure -Developed by experts for Sheet Metal Workers, Layout Men, Mechanics, and Students.

1001 KEY FACTS AT YOUR FINGER ENDS

10 Big Sections, 350 Layouts, 1800 litest FULLY INDEXED FOR READY REFERENCE in onewering your layout problems. Easy to read and understand. Well printed in clear type. Flexible covers.

COMPLETE - PAY ONLY \$1 A MO. To got this assistance for yourself elimply fill in and mail order today.

AUDFL, Publishers, 49 West 23rd St. New York Mana rittle Shift Metal Pattine at 0.75 a 20s Pr. 254 se 70 at 7 re fruit 10 0 K twell count \$1 e 7 days and \$1 monthly pate \$4 to paid Otherwise 6 will require of

MANE

ADDRESS ...

OCCUPATION. ..

REFERENCE

ELECTRIC LIBRARY



In eastly to make At I a profession of the St Theoreticals made simple as AH! Practical limits trade information for the expert and ALL electrical workers.

Unicetions, answers, disgrams, executations, underwriter's code;

trical machines and appliances bullay COVERED All available at amalt cost, cast terms, BONIK A MONTH

You can start your subscription with any votume Write TODAY for Luctric Folder and FREE TRIAL offer,

AUDEL, Publishers, 49 W 23rd St., New York 10, N Y.

Mail Vol T Electric Library on 7 days' free trial. If O K I will remit \$1.50, otherwise I will return it I also request you to mail one book each month on same terms. No obligation unless I am satisfied.

*** 11 *** / ***** **

Name

Atlucess

Employed by

\$11

1800 PACEC grant a look grantill of sea

a week g seres es reg ex to rear grave e wate western en cars, trucks and buses Diesel Engines, Hydramatic & Fluid Drives Fully Explained A complete Guide of 1800 pages with trimp tri sal wa A PERSON NEWS TON IT PAYS TO KNOW

If we street a let was senten I STRA HOAD BY C. P. ST. in which is the restations - ves- How to adjust fan belts to the state of the kind How and and Citan Boar

To W. F. This sions - How to service brakes. How to admist steering goad. Those to cope with (gailton troubles - How to serv-I A F F ... LT tion - How to "tune up" an english

COMPLETE - PAY \$1 A MO TO GET THIS ASSISTANCE FOR **TOURSELF SIMPLY FILL IN AND** MAIL COUPON TODAY,



regrown bill with the factoring passents pour trace A do to tractice contain Practical Endide Frada Information Black to Black and I had been to be entired Hants to sok that want for I DATE Fight FXAMINATE A so Money Nothing to pay postman



AUDEL, Publishers, 49 W. 23 St., NEW YORK Press of the postume of PRES PREMINACION books in a key of the model of the press o

Check 4101W%

You Can Look Over Any Gorde In Your Own Home

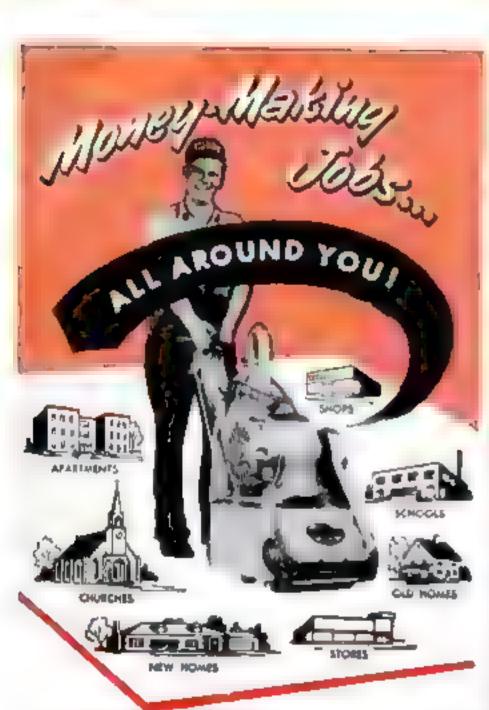
Start the Lasy Paymento If Satisfied

		_	_	
To	124			

	•	-		
	w.	v	А	м
•	-		•	•
-				

	A common to the total Pages \$ 0
c.	TAUCK & TRACTOR GUIDE 1299 Pages
ũ.	DIESEL ENG. NE MANUAL, 575 Pages
Б	WELDERS GLIDE 400 Pages
	BUJE PRINT READING A16 PARAS
_	MILJE PRINT READING, 416 Pages MATHEMATICS & CALCULATIONS, 700 Pages
	SHEET METAL PATTERN LAYOUTS \$100 Page.
	SHEET METAL WORKERS HANDY BOOK, 388PES.
	MECHANICAL DRAWING GU DE 160 Par
	MECHANICAL DRAWING & DES-GN. 48. Pages
	BARCHARE MODEL & SAN D
	TELEVISION SERVICE MANUAL, 384 Pages
٠,	DESCRIPTION SERVICE MANUAL, 384 PARES
	RADIOMANS G JIDE 914 Pages
	ELECTRON C DEVICES 216 Pages
ų	ELECTR C MOTOR GUIDE 1000 Pages
	CCCCLUIG MINING DIVIDING TAT LINES
ä	ELECTRICIANS EXAMINATIONS, 250 Fages
L	ELECTRIC POWER CALCULATIONS, 425 Pages
	HANDY BOOK OF E, ECTRICITY 1440 Pages
Ē	ELECTRIC DICTIONARY, 9000 Terms
ш	ELECTRIC L. BRARY, 7000 Pages (12 Book Set 1)
	MARINE ENGINEERS HANDY BOOK, 1258 Pgs
	SHIPFITTERS HANDY BOOK, 250 Pages
	REFRIGERATION & Air Conditioning, 1280 Pgs.
	MILLWRIGHTS & MECHANICS GLIDE 1200 PET
	POWER PLANT ENG NEERS GUIDE, 1500 Pages
	ENGINEERS & FIREMANS EXAMS, 525 Pages .
	PUMPS Hydraulics & Alt Compressors, 1658 Pgs
	ENGINEERS LIBRARY (3 Book Set)
	A 1 WART 9" Fage
	"TRDENERS & GH WE . (1 L) 4 BM K Set
	CARPENTERS & BUILDERS QUIDES 4 Book Set
	PLUMBERS & Steamfitters Guides (4 Book Set)
	MASONS AND BUILDERS GUIDES 14 Book Selv
	PAINTERS & DECORATORS MANUAL 450 PES
	HOUSE HEATING GUIDE, 1000 Pages
[OIL BURNER GLIDE, 384 Pages

Name	-	_	_	_		_	 	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	-	_	_	-	-	٠,	
Addres	5.	_	_	_	_	_		_	_	_	_	_	_	_	_	_	_	_	_	_	_	ı	_	_	_	_	÷	_		
Оссира	100	en.		_	_			_			_	_	_	_		_	_	_	_											
Employ																														



BE YOUR OWN BOSS! Big Money waiting for you today in floor surfacing! Hundreds of prospects near you! The floor next door may be your first job—and business mushrooms as folks tell others. Earn as high as \$50 and more a day sanding floors with an easy-to-run American Machine. Pleasant indoor work—steady the year round. A sound opportunity to get in something for yourself and be your own best! No schooling—no experience needed. Only small investment in sander gets you started to success! Send coupon for "money-making booklet" entitled "Opportunities in Floor Surfacing"—enclose 25c in coin or stamps to cover handling.



SENDI
The American Floor Surfacing Machine Co. 312 So. St. Clair St. Toledo 3, Ohio
"Opportunities in Floor Surfacing", telling me how I can mart my own floor sanding business.
Name
Street
City



Get your PREE copy of the new 24-page booklet "Why & How to Weather-Strip" foday. Available where you buy your hardware or building supplies.

Ot, write direct to Dept. PS 11.

BRIDGEPORT FABRICS, INC., BRIDGEPORT 1, CONN.

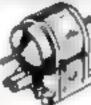
Watch Repairing Pays Big Money Learn at home



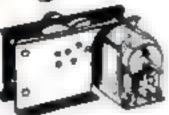
Watch repairers in great demand. Train step-by step in 10 easy transas. We furn shall tools and 15 jewel watch and practice movement. Turn spare time into cash. A licensed echool. Low nost, Send for FREE book today.

LLINOIS SCHOOL OF WATCH REPAIRING

THOUGHTFUL GIFTS FOR HOBBYISTS



Model 3100-A. "Tiny Atom." Meterspecies up to 6000 R P M. Drubbe extended shaft. Permanent A pico magnet field -wound fotor. For hobby and
experiment. Runs all rotating small
toys and models. 114-3 volt—\$2.00.
Higher voltages, \$2.50.



Model 8000—"Tiny Atom" Motor and variable speed gear train. Ten useful powerful working speeds from 30 R P M to 400 R P M. Complete kit with educational handbook, \$100,

CHOICE OF a USEFUL KITS

Vial containing all parts for applying power to toys and models by belt direct connection, spur gear or worm drive.

Kit K-1300 — \$1.00

'Tiny Atom' Motor and all components for every type of drive, either direct or radio controlled. Kit K 4000 - \$5.00. Similar Kit without motor. Kit-3700 - \$3.00



Remit to Dept 1 with order and we pay portage in 0.5 A. No C. 9. D. thep ments

WILSON'S OF CREVELAND

3 425 Lohosido Ave., N.W. A Cleveland 12, Ohio

This FREE SAMPLE LESSON

will prove you can become an expert

BOOKKEEPER ... ACCOUNTANT

OR C.P.A.

FREE SAMPLE LESSON

We offer you this free sample lesson so that you can prope to yourself that you can (AN master Accountancy—quickly, thoroughly—in space time at home.

La Salle's furnous 'Probtem Method' works how you are led step-bystep through actual secounting work—fearuing by doing and out hy study of theory alone birst you tackle easy problems, then more delicult own—until moneyou master them all and at every step you have the close personal guidance of La Salle's large staff of C.P.A. instructors.

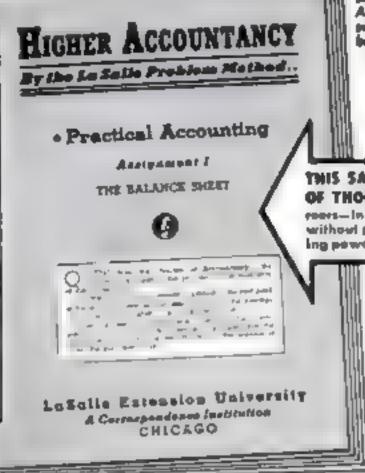
Mearly 10%
of all C.P.A.
In the U.S. have
been trained by the
LaSalle Problem
Method

GOOD-PAY JOBS IN 5 BIG FIELDS

If you were an expert accountant right now, chances are you would find yourself among the highest-paid of all professional men and women. Surveys show that accountants earn more than those in other pasjor professions.

There are five hig fields of opportunity open to Accountancy-trained men and women . . . opportunities that are wide open and highly inviting, offering maximum income and job security in good times or had. And under LaSalle's "Problem Method" you can start earning while still learning—either in spare-time or full-time employment . . . or an husiness for yourself with no capital required.

Get the latest information by sending for our 48-page book, "Accountancy, the Profession That Pays"... plus free sample lesson. The couponat right will bring both to you without cost or obligation. LaSulle Extension, 417 S. Dearborn St., Chicago 5, Ill.



LeSulle-trained Accountant's precess could be years.

This wall-paid

THIS SAME LESSON MAS STARTED NUMBERS
OF THOUSANDS toward well-paid accounting corears—In business, government and as C.P.A. 1 fiven
without previous knowledge, progress is rapid—earning power climbs fast. This sample tesson shows why.

If you have been envying the high incomes and good jobs enjoyed by thousands of men and women Accountants today...incomes ranging from \$1,000 to \$10,000 and more per year... why not launch such a career for yourself?

Do you doubt that you can?

Then let us send you—without cost or obligation—the same Lesson Number One with which Laballa has started several hundred thou-

sand men and women toward successful accounting careers. We want you to see for yourself how this remarkable method, originated by Labalto, makes Accountancy simple, interesting, practical, and certain . . . how it leads you step-by step to a complete mastery of Accounting—and on up to the coveted degree of Certified Public Accountant if you so aspire.

It doesn't matter whether you've had previous bookkeeping experience, or whether you don't know a debut from a credit. Whether you wish to qualify as an expert bookkeeper, advanced accountant, cost accountant, auditor, government accountant, income tax specialist, or public accountant... you'll find in LaNaile's Problem Method the exact plan to prepare you rapidly and inexpensively—in apare bours at home—without losing a day from your present job.

So right now, today... if you are an adult, employed, and carnestly ambitious for capid advancement in this highest-paying of all professions... send your name and address on the coupon below. We it send the free sample lesson—plus our 48 page book outlining today's career opportunities and how you can qualify for them. A coupon like this has started many thousands toward greater success. It can do the same for you. Mail at today!

Clip Coupon Mail TODAY!	_
LaSalle Extension University A Correspondence Institution	ı i
Dept. 1183-H, 417 S. Dearborn Street, Chicago S, Illinois	
YES, I want to see how LaSalle's "Problem Method" works . how I can qualify	' I
for high-pay Accountancy positions. Send Free Sample Lasson — also your 48- page book. "Accountancy, the Profession That Pays"	
all without cost or obligation.	
Name of the second seco	N/A
	ant.
Sent Address	W.
City, Zone & Shall,	111
Present Punition	·#/
	all l

NEWS FROM SCIENCE ABOUT YOUR HAIR



V-7

—new grooming discovery outdates messy oils

Not an animal, vegetable or mineral oil, V-7 in new Vitalia Hair Tonic is a completely new greaseless grooming agent.

PROOF

you don't need grease to correct dryness



New research on human hair shows that even very dry hair regains its normal moisture content faster with new Vitalis than with any leading cream or oil hair tonic.

KEEPS YOUR HAIR NEAT ALL DAY —GREASELESSLY





Add Parakeets

You may be interested in knowing that Mrs. Micawber, the parakeet my husband wrote about in the October issue, is a mother. At this writing she has hatched the first egg out of a clutch of six. We expect the rest of the fledglings to arrive in the next 10 days—one every other day.

We had doubts about Mrs. M.'s interest in motherhood because she had been a household pet. The fact is that she disdained the first male we put in the cage, Wilbur



Crane, the breeder, suggested that we bring her to his aviary where she could hear the cheeping of fledglings. That, and another mate, did the trick

Miss. Devon Filancis, White Plains, N. Y.

Misplaced Caution

I appland your efforts to protect readers from accidents, but I think you carried caution too far when you warned them [August, p. 183] that chloroform is inflammable.

It isn't.

ELMER F. WAY, Chicago.

Our intentions were better than our chemistry. We should have warned that the stuff should be used only in well-ventilated rooms because of the toxic qualities of its fumes.

Some Clocks Are Ambidextrous

An article in PSM [June, '53, p. 217] suggests using an alarm-clock winding key

Practice h Kits I Send You

Nothing takes the place of PRACTICAL EXPERIENCE That's why NRI training a long in LEASURILING BY BUILDS You me parts I send to baild many circuits

on the Hadistanii Trinenium, 1936. my Servicing Course you huild the modern Radio shown at left, You build a Multitester and use it to help make \$10, \$15 a week fixing sets in spare time while training. All equipment is yours to loop. Coupon below will

bring book of important facts. It shows other enterment you build.



As part of my Communications Course send you parts to build low-power Broadcasting Transmitter et left, Use it to get practical experience. You put this station "on the sir" . . . perform procedures demanded of broadcasting station operators. An PCC Commercial Operator's License can be your ticket to a bright future. My ommunications Course trains you to get your Homes. Mail coupon. Book shows other equipment you but if for peach and experience

ill Irain You at Home



Making Johs, Prosperity

26 million homes have Television arts now. Thousands more sold every week. Trained men needed to make, install, service TV esta. About 200 television stations on the air Hundreds more being built. Good Job opportunities here for



"Am transmitter-studie operator at KPAT, Most Important - of my Me was when I encoded with NRI "- Elmer Preveldt, Madiane, S. Dahota.

blade my first \$100 from space time work before 2.6 Seished my course. Now 1 average better than \$10 m week, space time. - Frank Rorar, Lorain, Ohio.



"I'vy come a long way in Radio and Television since graduating, Playe my even. business on Main Street."— Jee Travers, Asbury Park, New January,

"I didn't know a thing ; about Radio, New have a c good job as Studio Engineer of KMMA." -- Bill Delsell, Central City, Nebrusku.





BROADCAST-ING: Chief Technicion. Chief Operator, Power Monitor, Recording Operator,

Remote Control Operator SERVIC-ING. Home and Auto Radios, Television Receivers, FM Radios, P.A. Systema. IN RADIO PLANTS: Dusten. Amistant, Technician, Tester, Servmanne, Service Managere MACO AND HARBOR RADIO: Chief Operator, Radio-Telephone Operator. GOVERNMENT RADIO: Operator in Army, Navy. Marine Corpa, Porestry Service Disputcher, Aleways Radio Operator, AVIATION RADIO: Transmitter Technician, Receiver Technician, Airport Transmitter

Operator, TELE-VISION: Pich-up Operator, Television Technician, Remote Control Operator



America's Fast Growing Industry Offers You Good Pay, Success

Training PLUS opportunity is the PERPECT COM-BINATION for job security, advancement. When tissue are good the trained man makes the BETTER PAY gets PROMOTED. When jobs are scarce, the trained help assure you and your family more of the better things of Mrs. Radio is bigger than ever with over \$,000 broadcasting stations and more than 115 MILLION

sets in use, and Television is moving ahead fast. Start Soon to Make \$10, \$15 a Week Extra Fixing Sets

My training is practical, complete, is backed by 40 years of success training men at home. My well-illustrated lessons give you basic principles you need and my skillfully developed kits of parts "bring to life" things you learn from the lessons. I start sending you special booklets that show you how to Ax arts the day you earnil. Multitester you build with my parts helps you discover and correct set troubles, helps you make money fixing neighbors' note in spare time while training. Many make \$10, \$15 a week extra this way,

Common — Find But What Radio-Television Utter Too

Act now to get more of the good things of life. I send actual lesson to prove NR! home training is practical, thorough. My 64-page book "How to be a Success in Radio-Television" shows what my gradual are doing and AVAILABLE Television. Take NRI training for as little as 15 a month. Many graduates make more than

State

Zobě

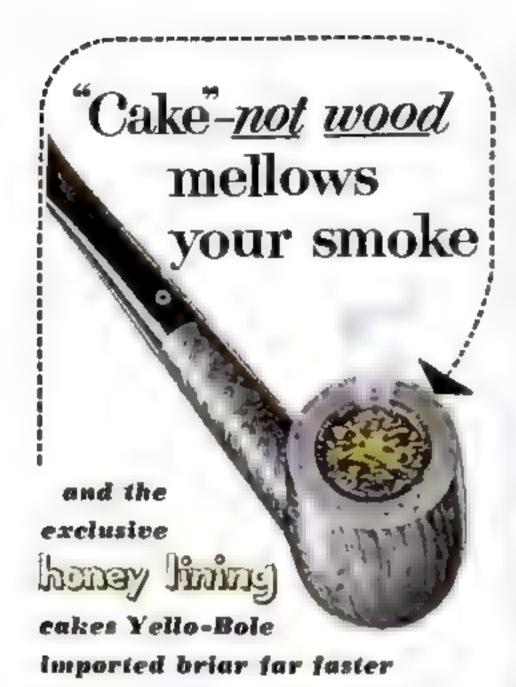
the total cost of my training in two weeks.
Mail coupon now to J. E. SMITH, President,
Dept. 1968. National Radio Institute,
Washington R. D. C.
Our 40th year.

OMDER 4.1. DICES	
Good for B	oth-FREE

AM. J. E. SANTH, Procedunt, Dogs. 300M. Method Sadio Institute, Weshington V D. C. Mail me Sample Leason and 64-page Book, FREE (No salesman will call. Please while plantly).

Name Address





than any pipe at any price!

The yellow in YelloBoie is real honey
—and honey cokes
faster! This great
Yello-Bole exclusive
builds up "cake"
from the first puff
... holds the cake
fast to fine imported
briar. One pipeful—
and you're smoking
cool and sweet. No
break-in. No tongue
sting! It's the pipe
that takes the cake'

PROOF?

Yelle-Bole is the world's largest selling pipe...BY FAR!



as a drawer pull by attaching it with a machine screw. That's not so easy, for every winding key I ever saw has left-hand threads.

LAWRENCE MANLOVE, Richmond, Ind.

Keep looking, because they come both ways. On some clocks, both keys have left-hand threads On others, one has a left, the other a right-hand thread. PSM clinched the case by turning up one antique on which both time and alarm winding keys have right-hand threads.

Back Talk from Turkey

The article in your July issue on the war against international counterfeiters includes a picture identified as a scene in Ankara,



Turkey. I wish to call your attention to the fact that the photo actually was one of Istanbul.

I have been a reader of your magazine for more than 15 years.

V. L. PAPADOPULOS. Istanbul, Turkey.

You are right about the picture. It shows a scene on the waterfront near Yeni-Cami Mosque in Istanbul

Front vs. Rear (Cont.)

In your Letters column of September Mr. Prows states that he would "put the engine in the rear so it wouldn't come crashing through the fire wall" in case of a collision.

I'd think it would be *more* apt to come crashing through if it were placed in back. Or do you think he's talking about collisions in the rear!

DAVID ANDERSON, Beaumont, Calif.

We think he was talking about front-end collisions. And the question—which we won't try to settle—is whether an engine is more likely to be pushed back into the driver's

INVENTORS

Learn how to protect your invention. The U. S. Patent Laws provide that any new and useful art, machine, article of manufacture, or composition of matter, or any new and useful improvement thereof, may be patented if the act of invention is involved. Therefore, every inventor with a valuable invention should take advantage of the Patent Laws and proceed for patent protection in order to safeguard his rights.

A patent gives the inventor the exclusive right to prevent others from making, using, or selling the invention claimed in the patent for a period of seventeen years.

The Patent Laws were enacted for the benefit of the inventor to give him protection for the features of his invention which are patentable. These features must be properly and concisely set forth and claimed in a formal application for patent, in order to comply with the requirements of the Patent Laws. For that reason, unless the inventor is familiar with patent matters, he should engage a competent registered patent attorney or agent to represent him. We are registered to practice before the U. S. Patent Office and are prepared to serve you in the handling of your patent matters.

A specially prepared booklet entitled "Patent Guide for the Inventor", containing detailed information with respect to patent protection and procedure, together with a "Record of Invention" form will be promptly forwarded to you without obligation upon request.

CLARENCE A. O'BRIEN & HARVEY JACOBSON

Registered Patent Attorneys

32+L DISTRICT NATIONAL BUILDING WASHINGTON 5, D. C.



YOU CAN SEAL ABOUT EVERYTHING WITH

PERMATEX FORM-A-GASKET.

Leakproof against water, oil, gasoline, most chemicals, heat and cold.



SAVE CORRODED

Clean out corround. Build up with Form A - Gasket #1. When set, reassemble with Form - A - Gasket #3.



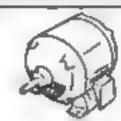
SIALS CAR WINDOW CLOSERS!

Seal automatic window cloner cylinders with Form-A-Ganket #2, it allows ister removal of cap.



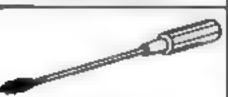
KOPE MAGNETO DUST PREE

On farms and other dusty areas, seal magneto caps and covers with Aviation Form-A-Gasket #3.



SEALS BLECTRIC MOTORSI

Keep motors dry by coating the motor windings and sealing the cover flanges with Form-A-Gasket #2.



PROFFED FARTS

Use Form-A-Gasket #2 on a long shank acrewdriver with a thin strip of cloth around it. Makes it easy to pick up small parts you can't reach.



MEND CAR WEATHER STRIPPINGS

Aviation Form A-Gasket #3 holds stripping in place. Also good for car floor mats.

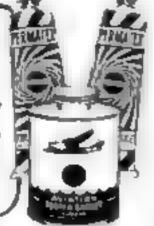
3 TYPES

NO. 1 Sets quickly, dries hard

No. 2 Sets slowly, remains plable

No. 3 (Aviation) Brushable hand (brush in can), sets to a poste; remains tacky

All three belong in your shop'



PERMATEX COMPANY, INC., Breefilys 35, N.Y.

Over 50 Chemical Products for Better Automotive Maintenance

FORULAR SCIENCE

lap or thrown forward against the driver's back.

Who's Nuts?

You have a swell magazine—keep it that way. You seem to know just when I have a certain project on the fire, for you always



come up with an article on the subject just when I need it most.

My wife says I am nuts because I start looking at a magazine from the back. Maybe you can help me find out if other people do too.

RALPH C. FINN, Northampton, Mass.

Thanks, maybe even more readers would enjoy the magazine if they read it Mr. Finn's way.

Coast to Coast: \$15.52

Wilbur Shaw drove a Mercedes diesel and wrote about it in your June issue. I have owned one of these cars since June. 1952, and just finished a coast-to-coast trip and return with it. The trip was trouble-free and took six days to the coast. We kept a record of the trip just to see how close Mr. Shaw was with his statement that this car "will chug from New York to Los Angeles on \$12 worth of fuel." He was very close undeed, as you will see from my actual figures: mileage, 3,124; chesel fuel, 71 gallons, cost \$15.52.

F. ROTH, NYC.

Who Made a Boner-Or Did They?

PSM has pulled the most colossal boner of all time, in my opinion. Browsing through an old Feb. '36 issue, I noticed an article which stated that a scientist had produced six compounds from an inert gas, argon. I checked in many of the latest chemistry textbooks and found they claimed no combination of this element was possible. . .

GUY DAVID MANGUS JR., Baltimore.

The chemists are still arguing. They believed "noble" gases like argon formed no

INVENTORS

If you believe that you have an invention, you should find out how to protect it. The first step is to have a search made of the prior pertinent U. S. patents. If a report on this search indicates that the invention appears patentable you can apply for a patent, and the specifications and claims should be prepared.

The firm of McMorrow, Berman & Davidson, with offices in Washington, D. C., is qualified to take the necessary steps for you. We can make a preliminary search on your invention, advise you whether we think it can be patented, and prepare your application for

patent.

Unless you are fully familiar with the U. S. Patent Laws, we recommend that you engage the services of a Registered Patent Attorney to protect your interests. The patent laws are your laws. A patent gives you the right to prevent others from making, using or selling the invention claimed in your patent for a period of 17 years.

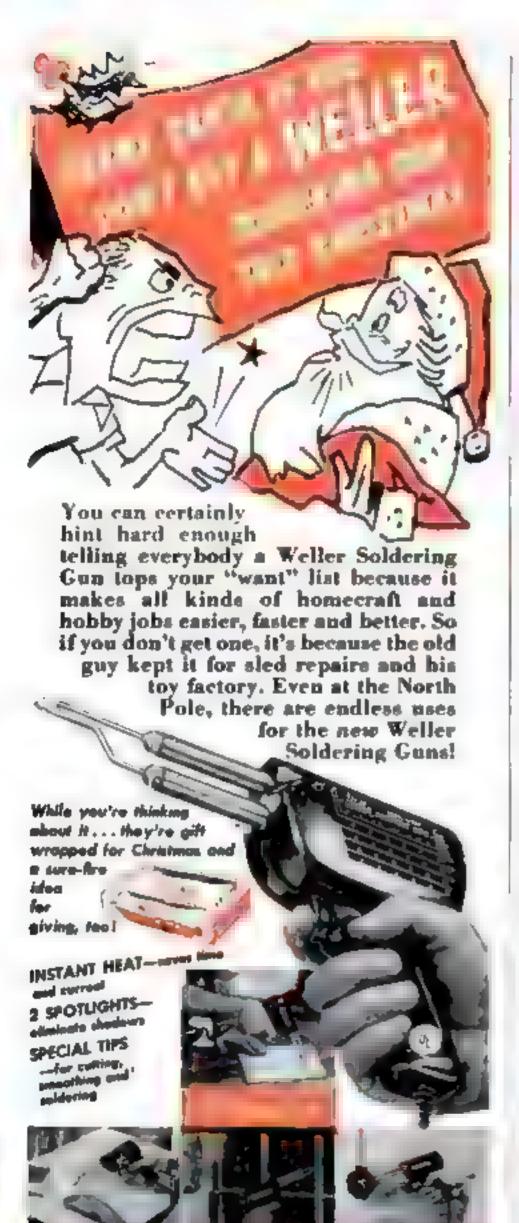
Use these patent laws for your protection. Investigate whether your invention can be patented. If you have what you believe to be an invention, we suggest that you have this firm make a search for you.

Send for a copy of our Patent Booklet entitled "How To Protect Your Invention," containing information about patent protection and patent procedure. Along with this we will also send you an "Invention Record" form, for your use in writing down and sketching details of your invention. We will mail them promptly. No obligation. They are yours for the asking.

McMORROW, BERMAN & DAVIDSON

Registered Patent Attorneys

PATENTS - COPYRIGHTS - PATENTS
142-T VICTOR BUILDING, WASHINGTON 1, D. C.



COLDERING GUNS
BOA Pecker Street, Easton, Po.

AT BETTER HARDWARE STORES EVERYWHERE

chemical compounds, until Booth and Willson told of producing several, as reported both in the authoritative Journal of the American Chemical Society and in PSM. Other chemists later repeated the experiments, disputed the evidence for argon compounds; but a recent report of two Brookhaven National Laboratory scientists supports it. They bubbled argon gas through an extremely cold (-321° F.) solution of boron trichloride in liquid propane, eyed a resulting precipitate, cautiously opined it "suggested that argon enters into compounds... somewhat as Booth and Willson had found..."

Flying Saucer Hits 35 M.P.H.

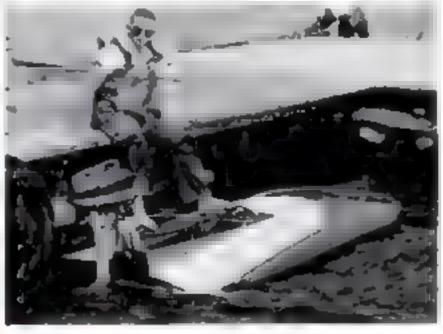
I am enclosing a snapshot of the Flying Saucer I built from plans you printed back in February, 1951, which I found to be very complete and easy to follow.

I used a 7%-hp. Mercury motor added a "rev stick" and attained 32 m.p.h., which is slightly faster than the speed predicted by Mr. Rogers.

Using brass screws throughout and %" marme ply, the bill came to \$62. It was well worth it. It took me a month and a half with a power saw and drill.

After running a couple of weeks, I decided to hop it up and bought a Michigan racing propeller. This boosted my speed to 35 m p.h., which is really moving with a stock motor.

That's me sitting on the dock, holding the boat. I found it better to wear kneeling pads



than to use cushions. As you can see, I am pretty big-175 lb.-but I fit perfectly in the cockpit.

I race the boat at Lake Hopatcong, N.J. I never flipped in it yet but I expect to, as I usually flip in hydros.

E. GEORGE KAPLAN, Brooklyn, N.Y.

"I.C.S. made the impossible—easy!"

You've often heard Arthur Godfrey, famed "Huck Finn of Radio," on his coast-to-coast "Talent Scouts" and other CBS programs—now winning new renown on television. But this is the first time you've heard the star-on the subject of I.C.S.:

> "I had to quit high school before the end of my second year. Later in life, at the U.S. Naval Materiel School at Bellevue, D. C., I had to master a working knowledge of math, all the way from simple decimals and fractions through trigonometry, in the first six weeks or be dropped from the course. So I took an I.C.S. Course and finished at the head of the class! I.C.S. made the impossible—easy!"

As usual, the former Navy radio operator and present Commander in the U. S. Naval Reserve knows what he's talking about. As an I.C. S. graduate, Mr. Godfrey is in the best of all positions to tell you about the educational system that's served so long as talent scout for American Industry.

Study his statement. Then mark your interest on the coupon and mail it today for full information on what I.C.S. can do for you!



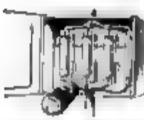
ART Without on			f the course DEFORE which I have	
Commercial Art Magazine and Bush -Bashaling Carlogning Show Card and Sign Lattering Fashion Ultritrating AUTOACOTIVE Automobile, Mechanic Auto Body Rebuilding and References Auto Gos Engineer AVIATION Artmatical Engineering Jr. Artmatical Engineering BUILDING Architecture Arch Oralling Building Contractor Estimating Carpenter and Mill Work Carpenter Foreman Reading Sheepring House Planning	C Steam Fifting C A: Conditioning C Beckrician BUSTNESS	C Mechanical Drafting	Mathematics Commercial Commercial Cood Inglish MECHANICAL AND SHOP Chechanical Engineering Industrial Supersympt Fortmanishy Machine Shop Practice Tool Design Industrial Instrumentation Machine Shop Practice Tool Design Industrial Instrumentation Machine Shop impection Chechine Shop imperimentation Chechine Shop imp	Stationary Steam Engineers Stationary Forgman HADIO TELEVISION COMMUNICATIONS General Radio Redio Operation Radio Servicing -FM Television Flectronics Telephone Work HAILENOAD Locamotive Engineer Dietal Locamotive An Resides Car Inspect Rational Administration YEXTILE Testify Engineering Collen Manufacture Ration Resides Wooden Manufacture Loom From Testify Engineering
Name			ner	
Name	Zama – Wada	Aga	Working House	AN b

NEW ELECTRICAL TROUBLE SHOOTER!



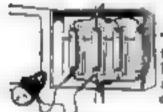


ONE POCKET TESTER DOES THE COMPLETE JOB



IT'S A SNAP-BOUND AMMETER

Measures surrent instantly without shutdowns or ammeter connections. Just snap the trigger-operated jaws around one conductor (insulated or un-(nsulated) and you have your reading,



IT'S A VOLTAGE METER

To measure voltage, simply plug the test leads into instrument and elip to load. You get an accurate voltage reading on a full-size calibrated scale without doubt or guesswork.

Combines testor reggodness with instrument occuracy,

YOU PICK THE RANGE THAT FITS YOUR JOB:

MODEL	"10"	0-10	AMPS	AC	0-150/600	VOLTS	AC
MODEL	"25"	0-25	AMPS	AC.	0-150/600	YOLTS.	AC
MODEL	"50"	0.50	AMPS	AC	0-150/600	VOLTS	AC
MODEL	"100"	0-100	AMPS	AC.	0-150/600	VOLTS	AC

With the Amprobe Junior, you can diagnose service calls faster under actual load, check ime voltage, determine if wiring is adequate, balance loads, locate grounds, trace shorts, check motor overloads, etc. Ask your wholesaler for a demonstration. For descriptive literature, write to PYRAMID INSTRUMENT CORPORATION, Dept.PS113. Lynbrook, New York, (Export Div.: 468 Broadway, N. Y. 13. Cable: Morhanex).

and Build a Profitable Community Enterprise

Farm drainage, home building, reclamation projects, highway construction. From these and other sources come the biggest demand for drain tile in history More local plants are urgently needed.

Millions of dollars' worth of drain tile are used annually. Much of it, ordinarily, is shipped from far distant points. Local manufacturing is economical, logical, profitable The Champion Drain Tile Machine makes manufacturing easy. Parce production costs, Requires an shilled labor. Makes all sizes from 3" to 12". Yet requires only e moderate investment.

Outstanding Manufacturing Opportunity

Champion made coment tile are dense, strong, and truly round. No distortion, no shaling Worth more than clay tile, but can be sold for less — and still leave a handsome probi maren.

Write for the DrainTile Book, Talle about nement the as a local manufacturing enterprise. Tells about easy-payment terms. Write today.

Concrete Equipment Company 521 Ottowe Ave., **Helland, Michigan**





coul blist or flore in any store Sh mored at reach to (a) their there is lead to the excepting a provide who can use a account over his int of the de man on it is needed. A moreous can do it their bowd because if no de man one is a new form the enter the e



Why be a lonely unpopular with flower?

Learn of the short daying from the most innorm to the old favorities a dame. In it was a from the sarber, widely apparent to the form of the sarber of the sar

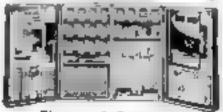
ROLLDEX, P. O. Bex 516, Dept. D-85, Safety Harbor, Fla.

New, exciting 16 page book on CHEMCRAFT and MICEOSCOPES

Chemcraft brings the fun and adventuce of a real chemical laboratory into your own bome. You amaze friends with mysterious tricks of chemical magic. You

do hundreds of regular chemical experiments just like a chemist. Send for your FREE booklet today...gives many home experiments. The Porter Chemical Co. 52 Prospect Ave., Hagerstown, Maryland.







ELECTRICITY-

The Power Behind Our Industrial Program

A great opportunity field and vital to Defense. Thousands of trained Electrical and Electronics men needed in good jobs and a real future. Why be estimized with a "no future" job? Get Pres Book that tells how thousands have prepared quickly for Electricity and Electronics at Coyne.

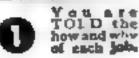
TRAIN QUICKLY AT COYNE FOR VITAL FIELDS

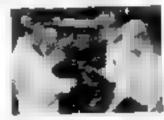
ELECTRICITY-RADIO-TELEVISION-ELECTRONICS-VITAL in Industry and Armed Forces. TRAIN QUICKLY for better rating, if drafted—vital job in Industry, if not. Trained men whether 17 or up to 45 needed Prepare now for steady, well paid, essential jobs in A FIELD THAT ALSO OFFERS A REAL FUTURE WHEN THE EMERGENCY IS OVER.

FINANCE PLAN-START NOW-PAY LATER

Finall now pay most of tuition later Monthly payment plan is sectally designed for K Veta II you need part-time work to belo out with Lying gapenees white at Coyne, we'll belo you get it, Special tultion plan for men of Draft Age.

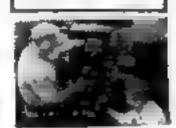






You're shown bow to do typical jobs by trained in-

APPROVED FOR VETERANS



You DO practical job YOU RSELF on equipment.

Mail Coupon for Big Gree Book

Whether you prefer Electricity or Television Radio, train on actual equipment, at Coyne. It is and mail coupon TO-DAY Pasts it on a postcard if you wish A big fully illustrated booklet and complete details will come by return mail. No salesman will call.

B. W. COOKE, Provident



ATECHNICALTHADE INSTITUTE CHARTERED NOT FOR PROFIT Established 1999 500 S. Paulina Dapt. 23. 7214 Chicago 12, Hilnoid

ELECTRICITY & TELEVISION & BAND & REPRISENATION & ELECTRORICS

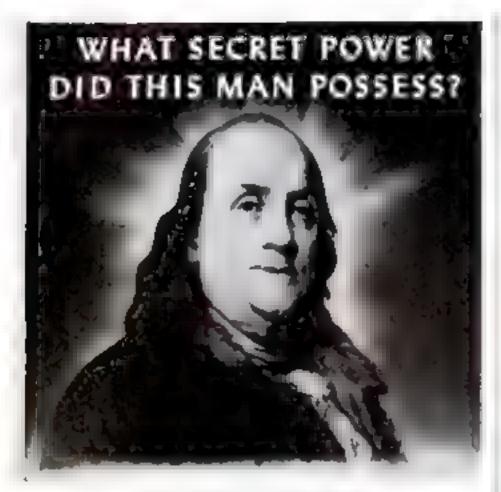
real may have Get bug I recomme ton y

П	
7	B. W. COOKE, President
ń.	COYNE SCHOOL 500 S. Paulina St., Chicago 13
ú	Dept. 41-129

Send your BIG FREE BOOK and details of your training offer This does not abagute me and no calesman will call, I am interested in

	Apple to the same of the same
O ELECTRICITY	☐ TELEVISION-RADIO

ï	NAME		+ + + +	 	 		14
1	ADDRES	S		 	 	*****	
ı	CITY				STATE		



BENJAMIN FRANKLIN (A Rosiceucian)

WHY was this man great? How does anyone -man or woman-achieve greatness? Is it not by mastery of the powers within ourselves?

Know the mysterious world within you! Attune yourself to the wisdom of the ages! Grasp the inner power of your mind! Learn the secrets of a full and peaceful life!

Benjamin Franklin-like many other learned and great men and women-was a Rosicrucian. The Rosicrucians (NOT a religious organization) first came to America in 1694.

Today, headquarters of the Rosicrucians send over seven million pieces of mail annually to all parts of the world. Write for YOUR FREE COPY of "The Mastery of Life"-TODAY, No obligation. No salesmen, A non-profit organization. Address: Scribe B A C

THIS BOOK FREEL



74e ROSICRUCIANS

SAN JUSE • (AMURC) • CALIFORNIA

SEND THIS COUPON
Scribe B. A. C. The ROSICRUCIANS (AMORC) San Jose, California
Prease send me the free book. The Mastery of Life, which explains how I may learn to use my faculties and powers of mind.
Name.
Address
City

C & H War Surplus:



calibrated in 20 ft. increments. Baro-

metric pressure setting adjustment. No book-up required . . , ready for instailation in auto or aurcraft.

Used, Good, \$312.495

you can build your own black light equipment at a new low cost with these easy to-assemble components. Geologists, mineral prospec-

tors and hobbyists can easily make laboratory black lights lows with eye-appealing fluorescence under black light. KIT CONTAINS: Ultra-Violet lube, brackets, balasst, starter, wire, plug, wiring deagram.

Special 1 4 Watt Kit-(514" tube).

Postpaid 111 52.00

All Equipment F.O.B. Passadang 4: Brainse Full Amount with Order

Motorado St. + Pasatena B. Calif.

Box 356-SN East Pasadena Station • Pasadona 8, Calif.

LEARN AT



Animals, Heads, Fishes, Pets : Be a Tax dermist. Profit and FUN.

the - - HOME MUSEUM IS O PROFITS FREE BOOK Was 1 at the

NOW absolutely PREE, Write TODAY. Send Postal TODAY for FREE BOOK. State AGE. SCHOOL OF TAXIDERMY, Dept. 26/1. Omaha, Neb





RN DIESEL **BIG PAY-GOOD FUTURE**

Whether you are to serve in the Armed Forces . . . whether you want to work in a large city, small town, or in the country. whether you want to be a mechanic, salesman, or own your own business—the rapidly growing field of Diesel offers you outstanding opportunities NOW AND AFTER THE WAR. Mail coupon new for FREE BOOKLET explain-

ing the opportunities in Diesel

THE BAILEY DIESEL SCHOOL 1651 S. Grand Ave. St. Louis (4), R NATIONALLY RECOGNIZED St. Louis (4), Mo.

Name	 *** ***	
Address		Age
City		State,





Want a New Kitchen in a Hurry?

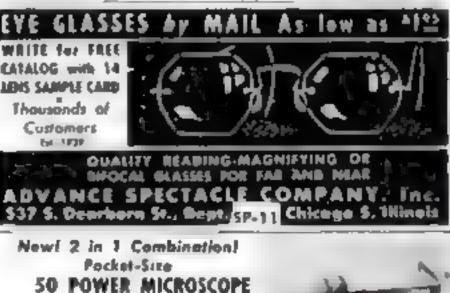
USE THESE MODERN CURTIS CABINETS!

Smart, modern design-marvelous new convenience features-roomy storage space—they're all yours in a new Curtis woman-planned kitchen. Each wood cabinet comes separately cartoned—complete with hardware and hinges applied. What's more, you can have your Curtis kitchen in natural birch to bring out the full beauty of the wood-or if you prefer, cabinets come finish coated in white, ready for you to decorate. Curtis cabinets fit any kitchen-are scientifically designed to make kitchen work a real pleasure. Send now for our full color kitchen idea book.



Service Bureau P5-11 Curns Building Choton, lows	CURTIS
Please send me your new kuchen idea book. I enclose 10 cents.	WOODWORK
Name	
Address	
City	State



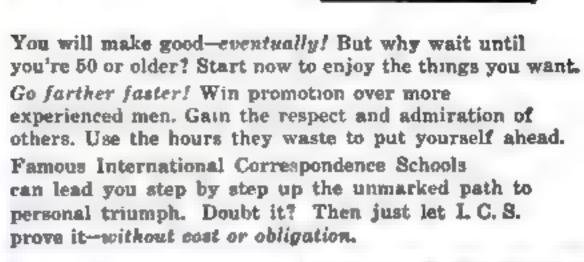


50 POWER MICROSCOPE 10 POWER TELESCOPE Only A .50 Larini Triescope and Microscope emisted to one ains. the precise estament imported No attent than a function per te receipt is in fower in consupe magnifies 50 Times. Sharp focus at any more limit, for sporte took up at our objects part main smooting Woodscript Venas suit. Send obers or M.O. Satisfortion Guaranteed' Order Sinck with 058-N

OUT PREE CATALOG EN-Warid's increase cariety of Out cal Perse Surge on Entere War Surgices Imported Domest c' Microscopes Terrecores, Hand Spiritestempts, Practic, Lobert, Mitters, Mittons and dozens of other hard-to-get Optical Reput Ask for Filter (ATALOG EN

SCIENTIFIC CORP., Barrington, N.

GO FARTHER FASTER!





WIN PROMOTION! As an I. C. S. student, your chances of promotion so up fast. I. C. S. keeps employers informed of progress of students. himny report new jobs while still enrolled.



NEW CAR1 You can afford it on the higher pay you get as a trained man. Raises come regularly to I. C. S. students. During one so-day period, 485 reported increases in take-home pay.



NEW HOME! Want real security? Listen-89% of today's active I. C. S. students are hobling down jobs while they study. Graduates include leaders in every American industry.

ONLY I. C. S. can offer you 391 up-to-date courses to choose from. The coupon lists 114. Check one that interests you. We'll send you complete information including special catalog on field of your choice plus helpful, 36-page guide to advancement, ' How to Succeed.' Here's that famous coupon:-

INTERNATIONAL CORRESPONDENCE SCHOOLS BOX 7463-N, SCRANTON F, PENNA. Williams and as shifted buy, sand me "NOW to SUCCEED" and the backlet almost the course DEFORE which I have marked X-CIVIL STRUCTURAL Cologo Properatory ENGINEERING Distribution Cond Engineering Commercial Heating Steam Fitting Air Conditioning Statement Steem Engineering Statement Financia HADIO TELEVISION, ART Commercial Art Magazine and Book Coul Engineering Bechingen COMMUNICATIONS dhese about Tractoral Engineering 🗔 Good English Surveying and Mapping. Structural Draft ng MECHANICAL Ceneral Radio Cartonning BUSINESS Show Card and Sign Lettering | Business Administration AND SHOP Radio Englished Fashion libustrating AUTOMOTIVE Automobile, Mechanic Auto Elec Technician C Auto Elect Rebuilding Machanical Engineering Certified Peblic Accessions Accessions Highway Engineering Radio Servicing-FM Television freed og Bluegrints Industrial Engineering Stenography and Typing Industrial Supervision Concrete Construction Electronica Ser city Engineering For empriship Telephone Work Machinical Drafting Secratorial MAILHOAD 🗆 Federal Tea Machine Des go Diefling Arrest Drafting Lacomative Engineer and Relinshing Otrosel Gas Enginesis AVIATION Arrangolical Engineering Jr. Mathine Shop Practice Business Correspondence Architectural Profiling Diesel Locomolive Electrical Drafting Tool Design Car Inspector Personnel and Labor Belstiness Air Brakes Air Brukes Car Into Industrial instrumentation Advertising Machanical Drafting Machine Shop Inspection TEXTILE Ratari Butiners Management Structural Draft-ra Afreralt Engine Mechanic Tentile Engineering Airpiene Drailing Managing Small Bysiness Sales Managerteni Shuet Metal Drafting Read og Bisseriets Cotton Manufactura Mina Survey ng and Deafting Tool make one. ELECTRICAL Gas Eachie Walding Rayon Manufacture Archelocture Salasmanship C Heat Treatment Metallergy CHEMISTRY □ Efectived Engineering Wooten Manufacture Arch Drafting Shoot Metal Work District Tracking and Dyoing Building Contractor Bectrician Electrical Maintentance Chamical Engineering Est maling ☐ Chemistry ☐ Analytical Chemistry Corponier and Mill Work. Corponier forested Toubile Designing Dietrical Grafting Refrigeration Electric Power and Light POWER YEAR OF THE SIX Petrolaum Nat Ges Pulp and Paper Making Trending Blumprints Mouse Planning Planning Combustion Engineering HIGH SCHOOL Demol Electric AULLIONTH STUDENT C. Plastics ☐ High School Subjects D Electric Light and Power . Horse Address.. Working Hours. Speciet by then rates to members of the U.S. Armed Forces. Corrector residents send compact to International Correspondence Schools Canadian, Add., Montreal, Canada.



WITH A POTENTIAL MARKET OF SO GOO GOO CUSTOMERS who pointed themse training so stem & know how that used to ake years to learn Learn at home by but ding on mable testible file years with your own and no gibbor's app lances. a med bloodwall for appliance repairmen to charge us the basis of \$5 to 40 M an house FREE ILLUSTRATED BOOK Shows two lone two parts every place of electricity hand before like to their money while two tears. Write lodge







INVENTORS:

I shall be pleased to furnish you, upon request, with information relative to patent procedure-without any obligation on your part.

PATRICK D. BEAVERS

Registered Patent Attorney

937 Columbian Building, Washington 1, D. C.

IF YOU WISH TO PROTECT YOUR INVEN-TION, You should take steps to protect it by a U. S. Patent. Write me for "INVENTION RECORD" FORM

WOOLWORTH SEDG , 35th FLOOR, 113C NEW YORK CITY

Whether an invention is patentable can be substantially de-termined by a search of the U.S. Patent records. Without obligation, write for information explaining the steps you should take to secure a patent.

JOHN N. RANDOLPH

Registered Patent Attorney

205 Columbian Building

Washington 1, D. C.

INVENTIONS

If you want to market or acil, your invention for cash or royallies, Write for our Free Soutist Send no drawings. We also welcome bearing from firms he private capital wishing to review inventions to any field. We will be glad to send nutice of our citante' inventions.

GLOBAL MARKETING SERVICE

2404 Mitchell Street

Book, SD

Cottlend L. Cotif.

VENTORS

PATENT INFORMATION Book and

INVENTOR'S RECORD without mirigation

GUSTAVE MILLER

113-P5 Warner Building Washington 4 D. C.

PIESTERNI PATERT ATTORNEY

PATENT ATTORNEY & ADVISOR D. S. MAYY BEPT, 1930-1947 ASSOCIATE EXAMINER U. S. PAY DFF, 1922-1939 PATENT LAWYER

Inventors

The following are the usual preliminary steps to take toward patent protection.

Make a disclosure of your invention; agn, date and have this document witnessed by two or more people who understand your invention; authorize your registered patent attorney or agent to conduct a preliminary search among previously granted U.S. patents for similar types of invention; secure a report on the probable patentability of your invention and a recommendation of the further course to take.

We shall be glad to send you without abligation our Instructive booklet, "Patent Protection for Inventors" and our "Evidence of Invention" distlesure form.

\$40-M MERLIN BUILDING, WASHINGTON 6, D. C.



TWO have been using your book on Ante Repair for the past year and free like I is a third man around the shop F M Scott. Management. Wash.



"Fixed motor in Minimules mother mechanic and surfaced so that I day " of Anothern. Her/receives. Tenn.



"Instructions to clear, have no trouble conting anothing as merhade as merhade in high plant."

5. Ordaner San Franciers Catif.



"Be may to understand bave done jobs with Manual I would bet have givenped without it."

— C. L. Teneralrom, Beset Pork Mach.



NOTOR Mapus, a wonderful help it has put me in a position in da every job." 3 L. Sharpiess Lee Appeles.



THESE MARES Barch Carl 1 ac Chescolet PHILIPPANE CHOICE Chryn or Chos es Dr Selo **©**indge Ford Frances Mency J. Number Ma ser PROPERTY Latuyette Lo Su to L neoth MPFCNFY Mark Nash Rambler Öldsmob g CHEMINA OF POLICE **Pechard** Plane auth Partition Bludebaker Terrapiane OAKS ADD Water Lectures ALL New Ampublica If were others un-Mark Mach STATISTICS IN **神経神 47 年**5

Whether it s on an 18 yearnt I samply' ur a brand hose 19 3 beauty YOU, too, can breeze through' day repair job ,u chip easily right? Just hook up the make, pastel and job in the quick index—and go to it!

Everything You Head to Know to Amilio Any Carl

This till NEW REVISED edition has MORE RELIABLED THEN EVER PROBLETION THEN EVER SON DOOR SON DOOR SON DISTRIBUTED THE SON DISTRIBUTED CONTROL OF THE WAS CHARLED THE SON OF THE WAS CHARLED CHARLES CHARLES CHARLES CHARLED THE STATE OF THE ST

Any man — even a green beginner can do a good job. If you re a top-noteh mechanic, you'll find yourself tackling tobs you that, you wouldn't touch before!

Form More Memory! Wie Greater Prestign!

The aditors of MOTOR S Macual have put together the Know How I from over 129 Official Shop Manuals "boiled it down into one handy book!

Valuable help in Body Service. Factory base Scattere and Adjustment Tables. Tune up Charis. Tables of Megastements and Crarabeas. Overbas are and Hegisterson tests.— AND MUCH, 24 C2 Bucks.

t ord for Armed Porces handreds of themseria of onto acre're munitives. It was it inc. sore you con its over 800 graph paper almost a free high the \$200 lines up to have a Top tion the full very Tid. CUNDATIONAL, G. AHANTER,

Try Book for a Week FREE

Soud No Money Puly nothing to presume Test touch in rest on more or a sup Fig. 1 APANTER Property of the Following the brook and over subling You don't risk and over subling You don't risk a presy Rush coupon for your free Irial copy of this great supper saving Manage Miller Hook first fresh St. 250 West with St. New York IR St. T.



FOR A WEEK FREE!

MAIL COUPON NOW FOR 7-DAY FREE TRIAL
MOTOR Show Dept. On the 21th 250 West 25th Street, New York 25, W. Y. Ruch to me at once if heck has appearite book too teast) Provide a new Auto acres to manual. If O h [wh): Provide a new Auto acres 22 months for 2 months, and a final interest of the option like them 32 months for 2 months interest of the manual return book postpoid to 7 days. (Foreign price, teast fit and acid, order.) MOTOR 3 New TRUCK AND YRACTOR ARPAIR MANUAL. Uncertaint at left If D.h I will remit 21 in 2 days and 12 months for 2 months, plus 15c delivery chairs with final payment. Otherwise 1 will return book promptly (Fareign price, centil 310 cash with order.)
Print Name Age
Print Address
City & Zone No. SAVE 36c delivery thanges by carroling WITH COI TON check of Poder order for full payment of 45 % for Ag's Re- just Manual or 66 in for Truck and Tructor Manual) Same 7-day return-for refund privilege applies.

ARMED FORUES

GET INTO

AUTOMOTIVE DIESEL AND ALLIED MECHANICS

Shop-Method Home Training



Diesel Fuel Injection - Automotive Mater Tune-up - General Garage Mechanics - Diesel Engine Maintenance - Auto Engine Rebuilding • Auto Elec. Service • Public Utilities • Parts Dealers . But & Truck Lines . Contracting & Excavating . Business of Your Own - And MANY other similar openings.

MASTER ALL PHASES | Get Master Shop-Method Home Training from an Established Resident Technical Trade School with its own Training Shops and Laboratoriesalmost 50 years of Successful Experience in Training Men.

WE BRING NATIONAL SCHOOLS TO YOU!

National Schools trains you for all opportunities in the dynamic, fast-growing Automotive-Diesel



and Allied Industries. Pay is good, the future excellent! TARN WHILE YOU LEARN! Spare Time Work Lessons show you how to earn while you learn . for extra money and experience. You learn by DOING!

YOU RECEIVE AND KEEP ALL THIS MATERIAL: Book Lesson Texts . Diesel Installation, Operation, Maintenance - Diesel Charl Manual - Spare Time Lessons - Thermodynamics + Engine Service Manuals » Engine Repair » Orive Systems.

WE SIVE YOU TOOLS OF YOUR TRADE! Including Drawing Set, Slide Rule, and this all-metal, fully-equipped Tool Kit-all free'

This course also affered in Spanish & Portuguese





APPROVED FOR G. I. TRAINING

NATIONAL

Technical Trade Training Since 1905 LOS ANGILES 37, CALIFORNIA IN CANADA: 193 BAST HASTINGS STREET. VANCOUVER 4, 6, C.

THE REAL TRADES AND RECORDS COMMENTS AND REAL PROPERTY.

find out now—mail coupon todat

NATIONAL SCHOOLS, Dept. DC-113 4000 South Figueron Street Les Angeles 37, California

Mail in envelope er paste ou portal card

Mail me FREE the book "My Puture in Automotive-Diesel. and Allied Mechanics," together with FREE Sample Leason. I understand there is no obligation, and no salesman

NAME	ACE
ADDRESS	
GTTY	ZONE STATE
T 45 -5 5 - 11 -4 - 4 5	

Dreck here If interested to Resident Training at Lax Angeles.

28 POPULAR SCIENCE

むらせ ゴイ ANYWHERE

PLASTIC VINYL o Ones wherever page car goes o Folis compactly a Keeps rain, that sait air our away a Protects your tar's finish a Durably constructed of vine plastic that it long wearing and tough a Nalon threads for extra security a Springtite clasticized bottom no as securely in all kinds of weather a Fils all makes and models a machinery equipment furniture stock piles etc. a Direct from manufacturer. a Encluse thech or money order for \$6.25 or \$8.25 piles 35c postage, or sent C & D. 10-Day Money Back Guarantee. MARDO SALES CORP Bien G 5 9 480 vezington Ava New York IJ N. Y

BRVERSIBLE AUTO SEAT COVERS

Months of FLEXTON plantic. Cloke at SNACE-ZIORA DESIGN - LEOPARD-COWINGS DESIGN

Each Only

ORDER FROM MFR. AND SAVE Co orly SNAKE AND ZERRA DESIGN And LEOPARD COWNIDE DESIGN Can Bo Lord On Either Side Water And Main-pepol Testated With Bide Orly Panels For Tight Fit Sews With NYLON Thresd For Long West Bisson To lettall Dress Up Your Car With Threse Colorful Expensive Colors Covers Looking Covers

10 DAY MONEY BACK GUARANTEE

Charte Of SPL'T Or SOL'D Front Smit Only \$2 05 Com-plete Set for Both Front & REAR DNLT 55 00. Since by Design Wanted. Make Of Car And Seat Style Enclose Payment And Save Fostage Or Send COD.

MARDO SALES CORP. Dept. DS-743 480 Leaington Ave, How York LT, H. V.

"NEW FLOORS" FOR OLD:..10d

Now . . . a new handbook, "How to Finish Wood Floors . . . Old Or New." This authentic easy-to-follow guide describes latest methods and materials. For your copy, send your name, address, and 10¢ in



FABULON - Dept. 23 - Suffale 3, N.Y.

Tradic men men 64 000 to \$19 000 and m. Thousands of firms med expects on rates tariffs regulations. We train put thereby in spars time at home for executive traffic jobs. Persons, training upder traffic sattles, tree Flacement entered and help Write for from 45 page book. Team: Management the Fact Growing Profession.

LASALLE Extension University, 417 So. Dearborn St. A Correspondence Institution Dept., 11827 Chicago'S, III.

Write 120 words per minute Age no obstacle—Low Cost

Pamous Speedwriting Shorthand. Ro symbols, no machines, uses ASC a Essiest to learn and use. Past preparation for a better position. Nationally used in leading offices and Civil Service, also by executives, students, etc 138 words per minute 50'r FASTER than Civil Service requirements. Over 200 000 taught by mail The very low cost will a revise you Typing available 31st Year Schools in over 400 cities in U.S., Canada, Cuba and Hawait.

WAITE FOR FACE BOOKLET TO.





IMAGINE THEIR JOY

when they found they could play this easy-as-ABC way!



Learned Quickly at Home

Luisto e deesis I routd anthat a learn to play without a function. Now when I play for people they hard a believe has I logened to plat in well lit so more a time



Your lessons have been birnt natiefertnes Tean play a I of the popular sulfigs. I have earned money phalog of denres

"P N J., New York

Picys on Badle

tion playing from KTHS,

you that I have a good to a

I ran t seep from telling

Ark serry

What Instrument Would You Like to Play?

UST name your instrument and we'll show you how you pan from to play (t-quickly easily in spare time at home. Never mind if rom another-don't worry about special talent." And forget all being hard to learn.

The trath of the matter is that thousands now play who never thought they could! Yes, men and women everywhere have discovered this amovingly easy way to search music at home. Now they are en-

juying the thrilling actualaction of moring "J 6. Ohis. playing the plane. Violin, guilar sax plane of a her average instruments. Some of them are playing in orchestras and over the radio others are teaching music, making money in sparse or full time. And thousands are having the time of their lives playing for their own enjoyment and the entertainment of their triends.

No federus at dy and practice no tiresome exercises. You learn to play be proving start right in with the melody of a simple time! It takes only a few manutes a day the cost is traine Does

It sound too good to be true? Mail the coupon and get the FREE PROOF!



SEND FOR FREE PROOF

Hot Matebun

Fascinating blastrated bookiet answers all your questions, (red Lesson-Sample shows how method works, if inferested, just mail coupon to U. S. SCHOOL of MUSIC, Studio C1811, Fort Washington, M.Y. (200 000 Students-Our 55th Successful Year)

I we pupie ander on request, freiness by

---- ---- - --

PREE! Book and Lesson-Sample

U. S. SCHOOL OF MUSIC, Studio C1511, Port Washington, N. Y.

Send me Prec Book and free Lesson-Sample. No calcaman is to call upon me. I'm interested in playing (came instrument) ☐ I do ☐ I do NOT—have instrument now

Name .

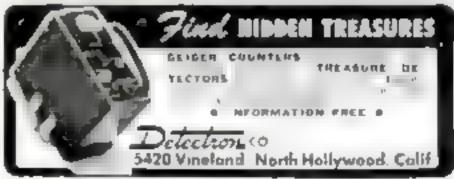
(please print)

45 to 1

That's the extering power you have-RIGHT FROM THE VERY START-in this problable? new gervice business that you can operate right in your own basement or garage! Yes, it's true-with our new portable machine you can launder venetian blinds so cheaply that you'll make \$45 for every dollar of operating cost . . . and that \$45 goes into your own pocket because you are in business for YOUR-SELF1 Look around your neighborhood and just count the hundreds of blinds in homes, stores, schools, and public buildings-and every one of them needs cleaning regularly! Others cerning \$50 a week just spending an hour each weekday evening! Full time pays up to \$1000 a month more! Requires no experience, and there's no age limit. Small investment for machine starts you in your own lifetime business.

bookiet trile all about machine easy lime-pay PREE pinh how to get business. Get names of successful owners from you blo salesman will eat 1 no obliga-tion. Write today to Venetian Blind Laundry Equip. Co. Inc., 442 N Seneca, Dept. 12-S, Wichita, Kansas.







Many Finish in 2 Years

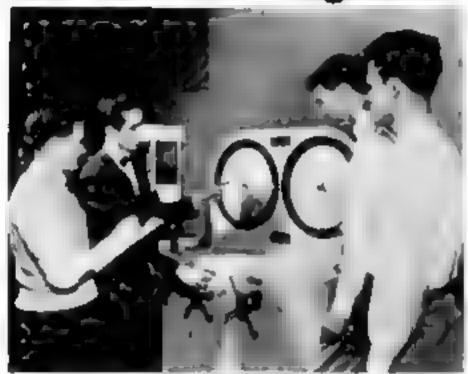
No classes. No time wasted going to and from school. Progress as fast as your time and abilities permit. Standard H S. texts supplied Thousands enroll each year in this 56-year-old school. Send for FREE descriptive booklet.

AMERICAN SCHOOL, Dopl. H846 Draxel at 58th St., Chicago 37, 111. Without obligation, please send FREE descriptive booklet.

Name



BECOME A **Mechanical Engineer**



B. S. Degree in 36 months



50% of the nation's industrial leaders started their careers with engineering training. Today, young men ltke you are being urged to prepare for careers in these rapidly expand-

ing fields. Nine separate programs give you a wide range of career opportunities.

Choose From These Courses -

ENGINEERING 36 months.

Bachelar of Science Degree . . opkonal year round study

- Mechanical Engineering with a major in Design. Melal Fabrication or Front Engineering
- · Electrical Engineering with a major in Erec Iron ca or Pawer

TECHNICIAN 12 to 18 months

- Rodio and Television
- Electronics
- · Electrical Power
- Mechanical
- Air Conditioning
- Welding

General preparatory course -- 3 menths

SERVICE & to 12 months

- Rad o
- We done
- · Refrigeration

- Negting
- · Electricity
- Television

Terms open January, March, June, October

Faculty of specialists, 50,000 former students, Annual enrollment from 48 states and 23 overseas countries. Approved for Veterans. Your Military, Practical or Academic training evaluated for advanced eredit. Send coupon for complete information. Residence courses only.

SOTH YEAR

NON-PROFIT

ice
me of course
Age
5tate

SUCCESS . BIG PAY in Aviation

MASTER A&E MECHANICS

urgently needed

Maximum troining in minimum time! Therough, practical instruction backed by more than 25 years of eviation technical experience. Training authorized under G. I. Bill.

Write teday1 **Hostrated Cotalog** Registror, Dept. 91, Miomi 30, Florida

SCHOOL OF AVIATION

THE WORLD 化化物 工學 网络西州上海 丙烷

Malayan THROWING DAGGER BALANCED TO STICK! MALAYAN HUNTING ENIFE esed for killing gome Essiting larget sport. Easy to learn fun

indoors or but-P417-70 -

Ectilement taore this Sport! Eusy to throw occurately with our clear stateuchons Beautiful, heavy. duty 10 knile Tempered steel Yough, bergain A' sporting goods dealers at sand \$1.98 to WHOLESALE IMPORT CO Dept 15,604 Marenga, Athambra, Cald.

The Albert

Only NEW MONEY MAKER

Make Up To \$10,000 Yearly—Full or Part Time

At least Secrets of happens and one making revealed, \$10 2006175 hope worket for special costs traveling, photographers, solumen, musipipes, teals, afectronics, pewelry gues, parteches, ptc Learn repoliting, Fast. nucy genirts. He special took or experience. Wholesale intoing, FREE DETAILS and SAMPLE INSTRUCTIONS

805 C4 West Support Blod. A Lite Angeles 17, Calif.



Learn to apply this tremendous POWER. Develop will-power, self-confidence, self-control, ANYONE can master this exciting, profitable profession JUST FILL in short time by training at home, WITH GUARANTEED RESULTS. DON'T DELAY. . . Write to America's oldest Hypnotic School for free information now-today!

Dept. 21 120 Ger	itral Park	South, i	N. Y. 19,	N. Y.	
Plane	sand ma	Free Inf	ermstion:	:	
HAME	7100. 770	4 114.	Herterheeses		
ABDRES	\$				

AMAZING OFFER / YOURS FOR ONLY 25¢

SCARCE TRIANGLES

PLUS! 100 FOREIGN STAMPS

AND WORLD'S RAREST STAMP SOUVENIR



MAIL COUPON TODAY FOR THESE 105 STAMPS FROM ALL CORNERS OF THE WORLD!

RUSH COUPON at once for biggest stamp offer ever made! Now you can enjoy this hobby of Presidents and Kings with this wonderful offer AT A FRACTION OF

ITS REAL VALUE - if you act promptly' Here's a chance to have fun and adventure with

America's favorite hobby. You'll increase your knowledge of the world, its geography, its varied architecture, its people, their customs and habits - through stamps! Imagine it! 100 genuine stamps from Australia, Asia, Europe, Africa - from everywhere! All unpicked and unsorted - just as received from foreign missions, banks, etc. Your big chance to find that hidden treesure worth real money!

Yes, beginners or advanced collectors, we'll rush YOU this wonderful offer - the big, big offer that gives you 100 stamps from everywhere, 5 beautiful scarce triangles, souvenir reproduction of the World's Rarest Stamp in ORIGINAL FULL COLOR, plus the helpful illustrated booklet

"Stamp Collector's Guide" - FOR ONLY 25¢! That's right, what a gift! Other valuable offers also included for your FREE inspection!

But, clip the coupon today — don't miss out on this real bargain goaranteed worth \$2.00 at Standard Catalog prices! If coupon is clipped, send 25¢ direct to: GARCELON STAMP CO., Dopt. PS11, Calais, Maine.

ACT NOW!

Horo's a rare chance to get these 5 colortul, scarce triangles - a wonderful addition to your collection!

> Beautiful twocolor Pope Stamp of Monacol

> > scarca Bird htamp from Hungary

San Marina commemoration of Stemp Doyl



The yellow and brack Vulcano Stemp from Neceroguet



Only here can you get this beautiful souvenir reproduction of the World's Rarest Stamp in original tolor Tells (ascinating history of how a \$1 30 stamp in British Guiana in 1873 became a \$50,000 stamp today! PLUS—Veluable illustrated STAMP COLLECTOR'S GUIDE tells where in find rare stemps, tips on collecting and other helpful hints—will also be sent FREE, M you ACT NOW!



GET/ALL' FOUR

GARCELON STAMP CO., Dept. PS11, Colois, Moine

I unclose 25th Please send me 100 PORBGN Stamps, 5 Triangles, Rerust Stone Folder and the Stone Collector's Guida.

ADDRESS.

SEND

COUPON

TODAY

ZONE . STATE

Do you was cy with

NOW.

at last, a new, madern; low priced electric foot warmer that will keep you healthy. happy and comfortable



Check stand coshiers, secretaries, assembly line workers, housewives, office workers, theatre cashiers, machine operators, telephone operators, and many others throughout the country are now singing the praises of the Electra Mat. There is no further need to work all day with cold feet. Many colds, cousing obsenteelsm and irritability, can be directly traced to told feet. Safe and Economical

Sine 14" x 21" leght-woight eldetre.

Consumes fess power than a 75 watt light bulb. Mail year sheek today for DNLY

P O.B.

MAT CO. PETERSON RUBBER Arcadia, California 5500 N. Malifax

Please send me _ Efectes Mats at \$4.75 each IMPOSTANT SAVING

If it as many protocod, price is body \$6.4% and. C.O.B. Envisor \$1.00 deposit with group - Proposit

Address. Sinte. PLIAM PROSE CHAMP Dept 100



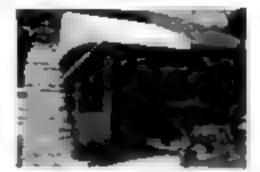
P THE ONLY TOOL YOU NATO IT A SCHEMOBINED

· These ownings are pretreated, ready for point It's easyl Just do the top - the sides ore ossembled Designed and engineered by Herbert's with expurience and mochingry to soll you a better awning

 AVAILABLE COMPLETELY ASSEMBLED WITH BAKED

WRITE FOR FIVE MEASURING CHART AND LITERATURE

Make Your Own! ASSEMBLE AMERICA'S Most Begutiful ALL-ALUMINUM DOOR CANOPIES AND WINDOW AWNINGS



DIRECT FROM FACTORY

Save 50%

8974	8ț. Charles	Rd. 67	erbe	Lb, 32.	Louis	14,	Mo.
			Manager & Table	at .			

N 1.ME		
ADDRESS		
CITE	STATE FONE	

SPECIALS DEOUCITO % ON 4 OR MORE TIRES!

THEE TUBE ON REQUEST

FULLY GUARANTEED

where makes Every the selected no. 5 bypected for your safety

HIGH GRADE TIRES GUARANTEED 12 MONTHS

WITH PASSENGER TIRES WHITE WALLS OR SNOW TREES SI EXTRA L

AAA PREMIUM GRADE BUARANTEED 12 MONTHS

9 34750-20 (0 14 08 6 49 025-20 16 68 9 78 900-20 18 78 00119 5 95 760x15 700x16 8 76 550x17 700x16/6/7 85 600x20 |760×15 350+13 600116 5 600116 6 640115 3. 650116 5 3F 700x18/6;7 88 600x20 .64 750x16/6; 0 96 650x20 76 800x15 6 88 700x20 196 820x15 7 48 12:6 6; 10 196 710x16 6 06 12:6 10; 1 18680x18 8 96 750x20 (h) 1 10. BA 1000120 12 BB 1000122 10 48 1100120 21 38 48 1100x20 48 1100x22 98 1100x24 450x15 47Q+16 MILITARY AA Guaranteed 12 Months-

900116 10 39 1000120 19 88 750120 10 92 1100120 21.86 444 BUARANTETO ISMONTHS 900-18 14 98 9 780-20 18 48

Largem stock of used tires in the East Thankands of Estished costum-ers. Write for Free Catalogue, MONEY ORDER OF CHECK WITH DRDER, MG C.O.D 's

New Trend Awar, 24

30

600+16 600+16 100+15 750+20

1333-35 North 5th Dept. S., Phila. 22, Pa.

Sec. at

UNIVERSAL GUIDE TO FREE LITERATURE

Stap Hear mently "100 POCK | How To Do It ' publi-Ship Process Woodwarking, high is sain Hubbles Reath Garden Mach ners Tracel Bushing Parisony Riccircus Radio. cuttotte on shop drait ca Fr & mt Substitute the state of the published of others containing to jet ross a su sothing? til little hate ad literature by countdeation gives complete description of contents tells you how and where is get nearly 700 ifferent publications FREE You must be entiated or your money back. Minply sand \$2 TODAY to

UNIVERSAL GUIDE, Box 971, Escondido, California



Dept 1911D Picesont Hill, Ohle

and see that earth is the co-make big filtings NO EXPERIENCE YERY LITTLE CAPITAL NEEDED. of it see the 12 st the same post are even blods and enough published or in remoids it storetail Sent the reduced a th order for afarmative retains the unpersonated making this was breakfulling this beautiful.

PROFITS MORE STUDIO MUNCIE, INDIANA

NUGE

EPHONES

Desk Stand style

Slightly used and in excellent condition, Meny Volumbia Uses-

> leter house phenes Loud Speakers Microphones Educational purposes

Toys, etc.

in U.S.A.

Come complete, ready to use Wiring Diagrams Fernished Please and the shapping and handling costs,

MICROPHONE Dept. K-404 1740 W. Lout Ave., Chicago 26, IIL



GET A SMOOTHER, QUIETER ENGINE.. MORE PUNCH ON THE PICK-UP...with the

MARVEL INVERSE OILER



Install it and see! Your car takes a new lease on life, when vital upper cylinder areas are lubricated automatically by the Marvel Inverse Oiler.

Operating off the intake manifold, this completely automatic oiler feeds to the upper cylinder areas in exact proportion to engine load and speed.

Install it. Fill it. Adjust it. And forget iti There's no maintenance worry with the Marvel Inverse Oiler. Fully automatic operation and full quart capacity give you 1000 miles of carefree motoring on each filling.

Here's how Fully Automatic Operation improves your car's performance! Notice how the Marvel Inverse Otler feeds oil just

exactly as your engine needs it. Throttle open, under load or speed... more oil. Throttle closed, less oil. /DIE

drops 25 MPH 12 drops

60 MPH

STEEP GRADE SLIGHT DRADE 50 drops

MANUFACTURING CO., INC. 242 West 69th Street

New York 22, N.Y.

Use only MARVEL Mystery Oil in the Marvel Inverse Oiler

Time-tested secret formula gives you everything you want in an upper cylinder oil. Especially blended and refined to keep aludge-forming components in emulsion, and prevent oil rupture.

Marvel Mystery Oil reduces cylinder wall and piston wear, it keeps piston rings at their proper wall tension. Prevents excessive wear on intake valves, and keeps exhaust valves from sticking.





to party of the Chinapy Spiral Street Calif and Bracks and Street Street Street Control Contro remain from Consider Riches of the Investor and other Present on the Present of t promise to ope at the value of the tracking to the term of the process of the pro for the apple et of the m



Complete Sets MET L-COTE & COP-A-COTE Solelions with Appholos in Coscs All Bio Laby SILV R COVE & SILVER POLISH with Applicates Combination Set of MET L-COTE & SILV-R-COTE Solutions with

Applicators GULD COTE with Applyance 58.08 materials and are tumpers and fries replaces a fit of the Court of the Tou'lt 44 67 permeasure each time you with the CTL I OTER, por lawting shire of out electropiate. 704 build rial thr ene nations perputational r

SELECTION PROPERTY. MET-L-COTE In rec-ctant a care to lend of herebitate and to be see and femilete' offers to menta-Alon in hotels and cestas-rate in hotels and Contactanta

CASH REPUND IF NOT COMPLETELY SATISFIED

EMPIRE MERCHANDISTING CO., Dopt. JP-11. 26 East First St. Mr Vernon R Y Please righ to New Picket Routestor and regtation substitute.

SHEV R COTE & POLISH 13.95 Comparation MET | COTE & SIL & COTE | \$3.95 **GOLD-COTE with Geld Applicator** \$5.85

STATE

MAME ADDRESS.

MET-L-COTE-Rep ales Restores CHROME N CKE BRASS COPPER STEEL HON AL BRONZE SILV-R-COTE-Replates Restores SILVER

GOLD-COTE-Pure 24 Karat GOLD So ut on Restores or a ne fester to worn or have thad valuable Gold jawe cy and

IMICKER PLATAYE WITH EACH COALL

HOW EASY IT IS TO REPLATE WITH THE APPLICATOR

RESTORE YOUR TREASURES -MAKE THEM VALUABLE AGAIN



Start to Speak a foreign Language Correctly IN ONLY 7 DAYS

Now you can learn Spanish, French German, or Italian just the way you leath a popular song

Funk & Wagnalls' Language Phone Method with brand-new R.C A, high-fidelity phonograph is cordings, brings you the actual voices of expert teach-

ers speaking in their native tongue. You learn right in your own home. your tenglier is always at hand a surmanual is always there to help you. With this simplified new method you and your whole family can gain the business and sexual advantages that come with knewing another language - easily inexpensively and in an amazing,) short trair

Send for free booklet that tells all about the Language Phone Method and the special free-trial offer



FUNK & WAGNALLS CO., Dept. PS-1 158 East 24th St., New York IS, N Y

Please send me the free booklet about your easy method of learning Spanish. Therenan. Tearman. Italian, and told me bow I may obtain a complete Language Phone Kit for seven days' free trial.

Address

City

State

new VIGOR and PEP!

or your money back in 30 days!

Losing your Strength? Vital vigo: and andurance? Muscle tone gone? Nervous? Discouraged? A subclinical deliciency may exist in your system or blood Science has the answer for BOTH Or Burkerd, M D & ves you mireculous VITERONE in capsule form crystamine Big plus vital nutritive elements, which may bring back your natural energy I you were lacking in these elements. Life's this inglespesiences may be yours again. Bank of Ame ica references Mushed in confident at wrapper

SPECIAL OFFER:



M O

Check C C O D. C l prefer 100 VITERONE capsules al \$9 🗌

DR. BURKARD LABORATORIES . Lab. PS-11 357 So Robertson Blyd Beverly Hills Ca if. WANT MORE PAY? MORE SECURITY? A JOB WITH FUTURE UNLIMITED?

ERANS! CIVILIANS! NO EXPERIENCE

I'll train you at home... in your spare time

19546251]

L. C. Lene, U.S. M.A.
President: Radio-Televialen Communication
Executive Objector Presse Communication

I give you ALL the practical training you need to qualify for the highest paid technician jobs in TV

RADIO-FM-TV TECHNICIAN TRAINING

No experience necessary! You learn by practicing with equipment I send you. It's ance that has belped hundreds of men towards a TV career, Many started with only grammar school training.

FM-TV TECHNICIAN TRAINING

Armed Forces or civilina radio experience!
Train at home, I give you kits, plus equipment to build BIG SCREEN TV RECEIVER, and FREE FCC COACHING COURSE! Everything AT NO EXTRA

OPTIONAL: TWO WEEKS TRAINING IN NEW YORK CITY AT NO EXTRA COST!

You get two weeks, 50 hours, of latenelve Laboratory work on modern electrunte equipment et our meociated school in New York City — Piercu School of Radio and Television. And I give you all this AT NO EXTRA COST whatsoever, after you faish your home study training in the Radio-FM-Technician course and PM-TV Technician Course

FREE FCC COACHING COURSE!

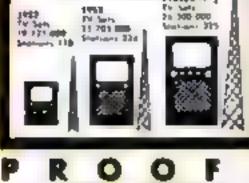
Important for BETTER PAY JOBS requiring PCC License. You get this training AT HOME and AT NO EXTRA COST! Top TV jobs go to FCC licensed techni-Cinns.

NEW! PRACTICAL TV CAMERAMAN & STUDIO COURSES

(For men with previous radio and TV training)

I train you at home for an exciting high pay job as the man behind the TV camera. Work with TV stars in TV pick-ups! A special one-week course of practical work on TV studio equipment at Pierce School of Radio & TV, our associate resident school in New York City, is offered upon your graduation.

SCHOOLS FULLY APPROVED TRAIN VETERANS LINDER NEW Q.I. BILLI H discharged after June 27, 1950 -CHECK COUPON! Also opproved for RESIDENT TRAINING In New York City at Plorca School of Radio and Television . . . qualifies you for full subsistence allowmen up to \$160 per ments. Write for details.



for better-pay jobs in TV

MEEDS THOUSAND OF TECHNICIANS!

in coming into practically community. More than 2,000 new TV stations authorized in this country alone! Thou a planeed and built. All kinds of new equipment coming on the market. Millions of new TV-out owners will need servicing. It's money-making opportunities NOW ... if you get is on the . ground door. There just won't be coough TV Technicians to go around. It's your

chance of a lifetime for **6000** EARNINGS; TOUR OWN SUST **MESS**



Jambindijas Volumeter-& cometer. Chattery by f

Transmitter.





MF Segmal Ban-

RADIO-TELEVISION TRAINING ASSOCIATION 52 EAST 19th STREET, NEW YORK 3, M. V. Licensed by the State of New York + Approved by the YA

MORE MONEY AND ARE WAITING FOR YOU HERE!

Earn while you learn by repairing TV sets for friends and neighbors. Many of my students make up to \$25 a week in spare time . . . pay for their entire temping this way . . . start their own money-making service business. When they complete earnings accom into big agures! My gradu-stes are now working at RCA, NBC-TV, CBS-TV, DUMONT TV and numerous other TV studios and plants,



of by mailing sounce. Try the Sample Legent. Read hear

MAIL THIS COUPON NOW! He Salesman Will Call!

Mr Leonard C Lane, President	
RADIO-TELEVISION TRAINING ASSOCIA	MOITA
\$2 East 9th Street, New York 3, N Y	PILA
Dear Mr Lane Mail me your NEW FREE	

FREE SAMPLE LESSON and FREE aids that will show me how I can make BIG MONEY IN TELE VISION. I understand I am under no obligation and no salesman will call,

CPLEA	SE PRINT PLAIN	ILY)
NAME		_AGE
Apotess		
City	ZONE	STATE
I AM Course FM TV Technic TV Cameraman	ian Course	IN. VETERANSI Check here for Training under NEW G.I. Bill

Course

MEN PAST 40

Afflicted With Getting Up Nights, Pains in Back, Hips, Legs, Nervousness, Tiredness.

If you are a victim of the above symptoms, the trouble may be due to Glandular Inflammation. A constitutional Disease for which it is futile for sufferers to try to treat themselves at home. Medicines that give temporary relief will not remove the cause of your trouble.

Most men, if treatment is taken before muligrancy has developed, can be successfully NON-SURGE-CALLY treated for Glandular Inflammation of the condition is aggravated by lack of treatment, surgery may be the only chance

NON-SURGICAL TREATMENTS

The NON-SURGICAL treatments afforded at the Excelsion Institute are the result of 20 years research by scientific Technologists and Competent Doctors.

The War brought many new techniques and drugs. These added to the research already accomplished has produced a new type of treatment that is proving of great benefit to man as he advances in years.

The Excelsion Institute is devoted exclusively to the treatment of diseases of men of advancing years, Men from all walks of life and from over 2000 cities and towns have been successfully treated. They found soothing and comforting relief and a new zest in life.

EXAMINATION AT LOW COST

On your arrival here, Our Doctors who are experienced specialists, make a complete examination. Your

condition is frankly explained to you with the cost of treatment you need. Your decision is then made Treatmepts are so mild that hospitalization

PECTAL COLON Are offen as-

sprinted with Glandwise Inflammation. We enn trent these for you at the same (ime.

is not necessary—a considerable saving in expense.

The Excelsior Institute has published a New FREE Book that is fully illustrated and deals with Diseases peculiar to men. Gives excellent factual knowledge and could prove of utmost importance to your future life.

Write for your FREE today.

Excelsior Institute Dept. B-77 Excelsion Springs, Mo.

Gentlemen:	Kindly	ernd	-	apt.	 J-1007	New	Book	e
					 +		 	

Diffeette bacarrat, 10 meil	* WHI.	34848 440	
74mp	· · · · · · ·		
A Adminis			

TIME SERVICE GUARANTEE

WAS \$50.00

under O.P.A.

OUR PRICE ONLY

Cuaranteed Inca Bloc. Shock-Protected Dampresist Dust Resist con struction. Anti-magnet ic Proved in Army Air, and Navy service

YOU SAVE \$35.00

Has sweep second hand, radium d.al. remains imported 1" , ewel Swiss lever movement You save seminationally on new de uxo watcher sold with WRITTEN ALL TIME SERVICE IN ARANTEE AMERICAN ARANTEE AM

GLARANTEE, herause we buy out distress and surplus stocks. Order now Wear 10 days Money back if not delighted, Order men s style-\$14.95, plus \$1.50 tax. Or tadles' style, \$13.95 plus \$1.50 tax. Send only \$1 down payment with order, pay because on arrival Or anclose full payment plus tax, and we pay postage. Handsome expension band included free if you order now

MEADE CO.

Dopt 46, 175 FIFTH AVENUE NEW YORK 10, NEW YORK

Wear At



REAL SURE-FIRE SELLER! THUGS AND THIEVES BEWARE!

Here Is a rat 24 to a work with one argut autother his clouds of real gar o is at ly 195 state and at any tate the most of one come of or at a rate and effective added a fur warms to be never to be set to several the Ree fut sergerous fire. arms to before a first the end to speed the kill three and the end to speed the kill tempt red than to the first tempt red than to the first tempt red the first tempt red to the first and 3 now right Tear than on ridges fully guaranced Not soul to intrutt.

Hagen Supply Corp., Dept. P11, St. Paul 4, Minn.



Wheels

7. Disc Wheel 12. Tire 12. Slews
8. Disc Wheel 112. Tire 12. Sell bearing
9. One Wheel 1 to remission. Tire 12. Bull bearing
9. Disc Wheel 1 to remission. Tire 12. Bull
10. Disc Wheel 2 formisping. Tire 12. Bull
10. Disc Wheel 2 75 semi-ping. Tire 14. Bull
10. Disc Wheel 2 75 semi-ping. Tire 14. Bull
10. Disc Wheel 2 75 semi-ping. Tire 14. Bull
10. Disc Wheel 1 75 semi-ping. Tire 14. Bull
10. Disc Wheel 2 75 semi-ping. Tire 14. Bull
10. Disc Wheel 2 75 semi-ping. Tire 14. Bull
10. Disc Wheel 2 75 semi-ping. Tire 14. Bull
10. Disc Wheel 2 75 semi-ping. Tire 14. Bull
10. Disc Wheel 2 75 semi-ping. Tire 14. Bull
10. Disc Wheel 2 75 semi-ping. Tire 14. Bull
10. Disc Wheel 2 75 semi-ping. Tire 14. Bull
10. Disc Wheel 2 75 semi-ping. Tire 14. Bull
10. Disc Wheel 2 75 semi-ping. Tire 14. Bull
10. Disc Wheel 2 75 semi-ping. Tire 14. Bull
10. Disc Wheel 2 75 semi-ping. Tire 14. Bull
10. Disc Wheel 2 75 semi-ping. Tire 14. Bull
10. Disc Wheel 2 75 semi-ping. Tire 14. Bull
10. Disc Wheel 2 75 semi-ping. Tire 14. Bull
10. Disc Wheel 2 75 semi-ping. Tire 14. Bull
10. Disc Wheel 2 75 semi-ping. Tire 14. Bull
10. Disc Wheel 2 75 semi-ping. Tire 14. Bull
10. Disc Wheel 2 75 semi-ping. Tire 14. Bull
10. Disc Wheel 2 75 semi-ping. Tire 14. Bull
10. Disc Wheel 2 75 semi-ping. Tire 14. Bull
10. Disc Wheel 2 75 semi-ping. Tire 15. Bull
10. Disc Wheel 2 75 semi-ping. Tire 15. Bull
10. Disc Wheel 2 75 semi-ping. Tire 15. Bull
10. Disc Wheel 2 75 semi-ping. Tire 15. Bull
10. Disc Wheel 2 75 semi-ping. Tire 15. Bull
10. Disc Wheel 2 75 semi-ping. Tire 15. Bull
10. Disc Wheel 2 75 semi-ping. Tire 15. Bull
10. Disc Wheel 2 75 semi-ping. Tire 15. Bull
10. Disc Wheel 2 75 semi-ping. Tire 15. Bull
10. Disc Wheel 2 75 semi-ping. Tire 15. Bull
10. Disc Wheel 2 75 semi-ping. Tire 15. Bull
10. Disc Wheel 2 75 semi-ping. Tire 15. Bull
10. Disc Wheel 2 75 semi-ping. Tire 15. Bull
10. Disc Wheel 2 75 semi-ping. Tire 15. Bull
10. Disc Wheel 2 75 semi-ping. Tire 15. Bull
10. Disc Wheel 2 75 semi-ping. Tire 15. Bull
10. Disc Wheel 2 75 semi-ping. Tir 50 HA. \$3 \$0 es.

PEGRIA STREET PETI CHICAGO 43 ILLINOIS

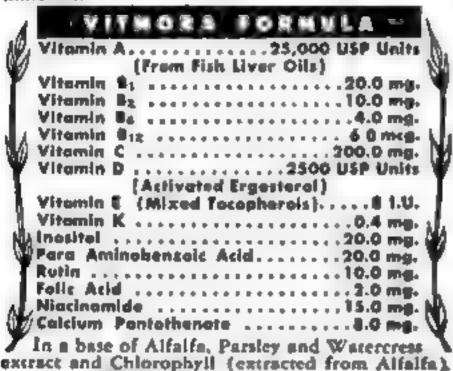


HERE'S the earliest was to been FRENCH SPANISH Russian. Il Girtonn, Italian Japa, e of Meant on Listen to FMFE 5 aided non breakable resort. Let a see exest form words in FMFE sample tesson. Almost at once you'd be clusting to a new language with a perfect accent' Offer tony etc. soon. Ruth 2 e to help cover cost of special parkagi z -1 mp s, of free record, lesson, State language you want W I a - - tree informs non on f Il Cor. Ing. course, CONTINA ACADEMY, Dept. 1211, 105 W 44th 8L, New York 18.

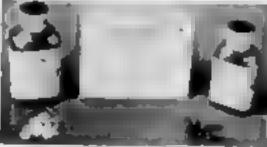




Now you can enjoy the daily nutritional benefit of Vitmora vitamin-mineral food supplements wherever you are. By fast, special courier this improved 31-day old to vitamin-mineral diets, will be delivered prepaid to you fresh from California at low, economical cost. Just 33c per day... \$10.00 per month gives you Vitmora's user-proved formula shown below, which is providing thousands with improved vitamin-mineral diets. Why not let it do the same for you and your adult family if your diet is inadequate in vitamins and minerals?









Iron 10.0	mg.
Calcium 1000.0	
Phesphorus 750.0	mg.
toding0.4	
Copper0.5	

Mongenese . . 2.0 mg. Zinc 7.0 mg. Cobalt0.2 mg. Nickel 0.2 ang. Fluroring 0.3 mg.

As a dietary supplement, two gelatine capsules and six mineral tablets daily, provide the following proportions of the daily adult minimum requirements;

Vitamin A, 625%; Vitamin Bt, 2000%; Vitamin Bz, 500%; Vitamin C, 666%; Vitamin D, 625%; Iron, 100%; Calcium, 133%; Phosphorous, 100%; Iodine, 400%.

Send of once for complete, factual details about Vitmora Food Supplements, and a FREE copy of the informative nutrition booklet, "Something Everyone Should Know." Address, VITMORA COMPANY, Dept. -5, 109 S. Adems Street, Glendale 5, California. Not Sold in Stores





Diamond Loan Bank Dept. PS-BERMAN BLDG., BALTO. 1, MD.



FOR NATION-WIDE INDUSTRIAL CO-OF TRAINING PLAN

USE YOUR DARK TIME AT HOME OR SHIRE RESIDENT TRAINING. Mrs who are awhill replaced inschange by modern appropriate tool, and the presidence of the personal property of the pr tions by caralting to \$1.4 MCC & Nation-Wide Industrial Cooperative Program. Write

SCHOOL CO-OP PLAN J BOME STUDY PLAN

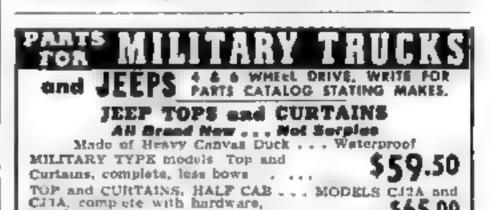
T AM ELIGIBLE FOR OLL BILL

1338 S. Michigan Ave.

ALLIED SCHOOL #1 MECHANICAL TRADES Chisago, IN.

PSORIASIS SUFFERERS: Has everything failed to bring even temporary relief from scales, lesions and itching? Then write today for FREE important information. You needn't invest one cent!

PIXACOL CO., Dept. P. Box 3583, Cleveland 18, Ohio



TOP and CURTAINS Complete. MODELE CIZA and CJ3A th hardware for entire Jeep. less bown

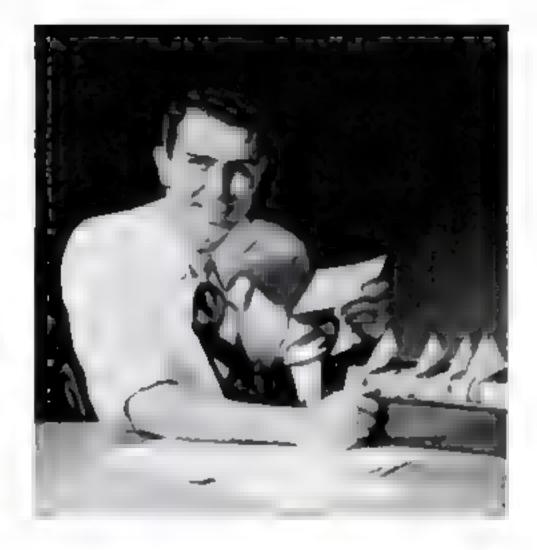


ess bows

Then ordering please state exact model till proces 100 h. C. Latie dep on 100s. Late Pep on f ODe 901 TROOST-GRIBOO-KANSAS CITY, MO

Start a profitable manufacturing business in spare time

with your own home as your headquarters



RIGHT at this moment there is a tremendous demand for new business enterprises in a branch of the plastics industry. Fortunately, this is a type of manufacturing business that does not require heavy or expensive machinery, rented space for storage, production or sales. A portable hand machine does the work wherever electric current is available, and the working area can be in almost any part of your home.

The opportunity that is open to you today, is to meet this growing demand in a new industry by establishing yourself as the manufacturing agent in your own trading area. Several hundred of our machines are aiready in use in both large and small communities. Some are even being operated successfully by women whose family duties make it necessary for them to be at home during the day, but whose family income is not enough to meet rising expenses. Most are being operated by men. Many started in spare time just to pick up an extra five or ten dollars for an evening's work. They found the work so profitable that some have now given up former jobs to devote full time to a business of their own.

One of our manufacturers gets all of his business by mail, Orders and money come to him in envelopes and he sends his products out the same way, Another delivers his entire output to stores in the vicinity. Ansupplying other manufacturers who do the selling. Still another works with advertisers in the manufacture of plastic advertising novelties and special-

The operation of the machine is simple and easy for anyone to learn. It does not require any knowledge of chemistry mechanics, or electricity. And what some say is best of all, a manufacturing business like this enables a person to make good money without any house to house canvassing. The machine turns out from \$5.00 to \$15.00 worth of work per hour and it can be operated for as short or long a time as you wish.

We have prepared a simple step by step instruction manual that not only tells how to operate the machine, but also tells how to get the business coming in at a profitable clip right from the start. We will lend a copy of this book to any serious minded man or woman with the

other does a wholesale business - understanding that a copy will be given them free if and when they purchase a machine-or the copy we lend can be returned if you decide not to go into the business. Reading it will not cost you anything.

> If you are interested in a nice little home business that can bring in an extra \$60 or more for ten or twelve hours work in spare time, send your name. All information on the book and machine will be sent free, postage prepaid and no salesman will call to bother you. You read about it in the privacy of your own home without outside pressure and then decide whether you'd like to take the next step. Address your envelope to me in person. Send me the coupon below. Or, if you prefer send your name on a post card and ask for "Free information on starting a manufacturing business at home." Either way, send your name today and find out about this wonderful new fast growing money-making business.

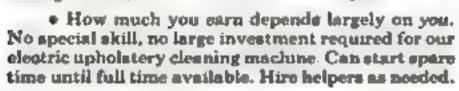
1512 Jarvis Ave., Dept. L-911, Chicago 26, Ill.

Raymond E. Brandell, 1512 Jarvis Av	e., Dept. L-911, Chicago 26, III.
Dear Mr Brandell: Plants aged toforma- tive showing how I can start a profusible monutacturing business in any home in	Name
spare time. All the information you need will be mailed to me free of charge and no telescent in to entire me. I am not ender any obligation to go sheed with	Address
the business and there is no charge for this information now or any other time.	City Zone State.

Sworn statement from Chas. Lemming reads:



 In city of less than 50,000. Mr. Lemming started his own business after filling in coupon like one below. He averaged \$100 a day during first year, some days \$200. Many others have succeeded. For example, Geo. Held groused \$380 in one week.



No shop necessary. You clean upholatered furniture on customers' premises—homes, hotels, motels, etc. Auto upholstering, too. No hauling; operate from your home. Watch business grow as satisfied customers tell friends. Supplies cost little, profits high.

 If you want to be independent—free of bosses. layoffs—start profitable year-round business of your own. FREE book tells exactly how to do it.

SEND COUPON TODAY FOR FREE BOOK

YON SCHRADER M/G. CO. 2151 "D" PL, Racine, Wisconsin Please rush your FREE booklet talling how I can start my own profitable, year-round electric Upholstery-Cleaning business. Request incurs no obligation. Address.



DEALERS PAINT STRIPING POOL parked in display cartains of 1 das. Fast, profitable seller. Write for us trated circular discounts

products results over the property of a simple and dary to the data from the per Additionable guide keeps from straight as an arrow Justus must be made curves so free hand designs. Adds now benety and for sheet sook to everything you paint. Send \$1 now!

WENDELL MFG. CO., Dept. 2111 4234 LINCOLN AVENUE, CHICAGO 18, RL.

STAMP COLLECTORS! SEND FOR THIS VALUABLE CATALOG!

It's New! It's Complete!

COLLECT STAMPS and enjoy the world's most fascinating hobby! In this catelog you will find "Everything for the Stamp Collec-tor" - beautifully illustrated. clearly directions, priced to save you money! Includes profusely Illustrated listing of United States Stamps; some amazing Special Offers for Advanced Collectors, Com-plete Outlits for Beginners; and information on "How to Collect"



Stampe". Interesting special offers will also be enclosed for your consideration. Write today for your copy, enclosing only 10c to cover handling and mailing costs.

M. E. HARRIS & CO., Dept. PS-311, BOSTON 17, MASS.

THE WORLD'S LARGEST STAMP FIRM



A FACINATING HODBY OR BUSINESS OF YOUR OWN!

COMPAN OF PERSONAL PARTY WITH EARTH BIT MADE MADE AND **PARTIE (DEMANA BUS TICOSATE ANT SMIRC). HOVELNIS.** to transmit Medical which bread American American METERS PARTY SAGED WINE HANDWARD DIC BILL PRINCIP

CALL STONE GRANCES WOMEN LAND CAN CHANGE WITHTHEFT. HOS CHIPPHONE CHAS BASE SIME NO HONEY HE HERILCHONE AND FORMAND TOUT CARE THAT PORTAGE OR WHO SAME AND BOOMS DAMA FORTHAND AND SERVICES

CAPITUL PLATING CO. - 4212 Queenshorr Dd. - HYATTSVILLE, SLABTLAND





PAYS DIG! SEMB FOR PRES, BIG, ILLUSTRATES CATALOG MOST involvation report
that he substant at histories, Marit and the your
sees but ness suichly Men, winder of all ages,
learn eas to Univer course. Nates Proportie
Massays ment Appearating Leans Maritagens and
felaced subjects STUDY AT MOME of the classe
results It leading a best Diploma awarded.
Write Tulbid for free bands, No state glass
Appeared for World War II and Kurean Veterans

WEAVER SCHOOL OF REAL ESTATE (Est 1956 Suite 300 Law Bidg. Popt. PS Kansas City, Mo. Spile 300 Law Bidg. Mannan City, Mo.

Thorn's a Thriff in Bringing a Crook to Justice Through Scientific

CRIME DETECTIONS

We have maght thousands this saciting profitable, pleasant perfection Let us truth you, the, in year arms likely fraction Police Potegraphy and Criminal lovestigation thoroughly, quickly and et small cost. FINGER

Over 200 of All U. S. Bereaus of Lieutification employ students or graduates of I. A. S. Yao, two run fit yester-sif to hi a respectable rates detection job with good pay and steady employment. But don't delay-get the details now but us show you how easily and completely I can proper you for this far-fracing work during spars from the rate for year and real fact. Write today stating age. No salesman will call. (A Correspondence School Stnor 1814)

FREELLI BLOE ROOK OF CRIME

PRINT

Expert

BOOK

TELLS

INSTITUTE OF APPLIED SCIENCE 1920 Sanaysida Ara., Dopt. 1368 Chicago 40, Ill.

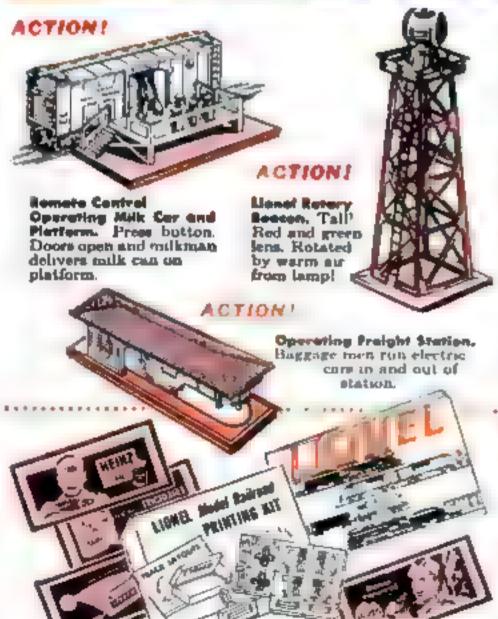
The only trains in all the World with Magne-Traction

LIONELTRAINS



That's Why They Have More Speed... More Pull... More Climb... More Control... Than Any Other Trains In The World!





Only Lionel Trains feature the greatest advance in model railroading "Magne-Traction" the permanent track-gripping power that's built-in, can't wear out. That's why they're unmatched for action they take steeper grades and sharper curves, pull more cars faster, start and stop on a dime! And they're unequalled for realism, the Lionel trademark for over 50 years smoke-puffing steam locos with built-in, two-tone whistle horn blaring Diesels. They're built for lifetime action solid steel wheels, heavy-duty trucks. And all Lionel Trains have real R.R. remote-control knuckle couplers! See them and the most exciting accessories and operating cars in the world at your local Lionel dealer's and bring Dad along!

SPECIAL BIG-3 OFFER! ALL FOR ONLY 50¢ postpaid

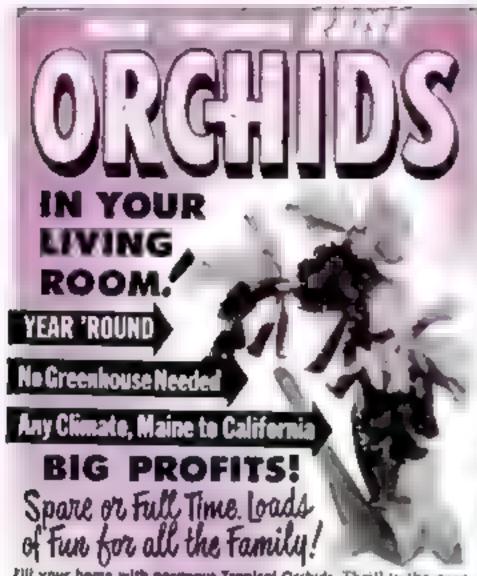
NEW TRACK LAYOUT PRINTING KIT PLUS SET OF EIGHT FULL-COLOR BILLBOARDS WITH THE NEW 1853 LIGHEL GATALOG . . . 40 PAGES IN FULL COLOR!

LIGNEL TRAINS, P. O. Box 9, Dept. X, New York 46, N. Y.

I enclose 50f for Big-3 Coupon offer above.

☐ 10f for Catalog only.

Warra		
Address		
Cky	Zone	State



Fill your home with gorgoous Tropical Orchids. Thrill in the gorgcous beauty of your very own huge purple Cattlesus like those you see in nearly every down shop I squisite Cymboliams. cometimes with 30 or more blooms on such stalk Hundreds of filliers, many grow without sail, getting fined from the air. Yelliew Orchids, greens blues, pinks, browns, every cambow color No procenbasis sended. Start on each table in your living room Any elemete, Maine to Untiformen.



Successful Home Grower SHOWS YOU HOW

Louis lichtemer, successful home grower, shows you step-by step how he and Mrs. Sch ower started with a few

plants at home, developed a big-profit husiness, and grew an Orchid collection now worth a fortune town how Orchids multiply - how one plant may become many each.

If Orthida No averhead. Takes few minutes a week Big-profit artiers come from ladviduals, Soriets, hotels, ctc., Popular year round gift difficus solding had-Order. Echlomer shows too how? Mull-Order. Behlemar shows you have!



The same of the sa

LOUIS SCHIRMER Organiza

Complete Structions - sources of the par-parts - in simple language, Jam-packed with "show-now" drawings, porgeous full-color pictures of Orchide. Also a real blooming-site Orchide plant from the Scharmer's own Gardens terrything pro steed to start to yours to exemine of home, without risk, Full details Learn how you may become an Orchid Grower Sand no munoyi Write taday, Aircraft is Buick **

TR to "A, F, SWER, AND MOR. 20 4622 Wlishter, Lan Angeres S, Calif.



Trapical Hamerland Dept. 2B.

Rush me complete free detaits on your offer of Louis Schiemer's Instructions which show me how to grow I rope of Druk de at bome The instructions for in inde a concerting sage Or had I fan and volumble home Protte Plan This request those out ob-gute me in our way

Name			
Address			
City	Zone	None	

laking Vitamins

Cut Your Costs up to 50%

A Postcard Will Bring You **FREE Catalog**

that lists practically every known combination of vitamins and vitamins and minerals.

Also FREE Vitamin Guide Book

that shows you how to reed a vitomin label and compare values.

No longer send you may \$4, \$5, \$8, up to \$15, per \$50 angules for the same vitamins your Doctor advises. After 20 minutes' reading of this Guide Sock you will understand vitamins as you never have before. You will not be feeled again by confusing, mysterious labels, you will be able to pick up may vitamin product and know if you are getting your money's worth. In this free catalog you are now asing, Compare the satencies and the prices and anterests you are now asing, Compare the satencies and the prices and you'll be amazed at the savings of up to \$50°. Step buying vitamine blindly Sond postoard today for free quide book and entalog to VITAMIN QLOTA. Dopt. 256, 860 Busy New York 3, N. Y., or Dapt. 258, \$125 Granatay Street Lee Angules 19, Galifornia.



Manifesting quickly improves with our pasy-tounderstand dicture featons! Out your spars time
to good use send today for () FREE doomLET,
"How to Second a dood Fabruary," or check
volumes wanted below of \$1 each: () Business
Writing Artistic Writing () Cord Wr ling
[1] Bird & Design Fibucishing () Engrossing
Alphabets, COMPLETE SET \$4 80. Ask for
price list of penman's supplies.

AMBLYN SCHOOL of PENMANSHIP A. Ellier, Pres. 43% Midge Bidg., Canana City, Mo., 1864.



SAMPLES FOR AGENTS flample offer and two send name at once florry Postenzal will de SEND NO MONEY facility of the Manual Control of the Author, a, ONIO

Broken er Leose FALSE PLATE

Make

hoperidally

avitten, plus apperal pon med for

DUR

Maret

Fix it Yourself EASILY in a few Minutes Your plates may become broken or loose just when you most them most. With FIX of KIT you can retails your own broken plates. Also tightens some fitting plates easily Get permapent comfort with profes-stonal material. Complete instructions. Satisfaction guaranteed or your money refunded. Order Nove at a new low price only \$2.50 postpard — or sent C.O.D.

Plates Like No

DENT-FIX DENTAL PRODUCTS, Copt, PS-11
Kaman City S, Missouri F.O. Box 674 BOOST YOUR INCOME WITH THE You can carp extra cash with

the Model 300 Ideal Lawnmower Sharpener, tred Bud recommended by leading manufacturers and service sluips, the Ident has everything you need, nothing else to buy, tirinds reel and bed knife, also reconditions Getstarted now in this highly profitable business. Write for cutning today.

The FATE-ROOT-HEATH Co. Dept. PS-11, Plymouth, Ohio

Don't be satisfied with an ordinary radio... allicratters and Hear it All!

Madel \$-53A. The finest small communications receiver built and ideal where maximum performance is required in small space. Covers Broadcast Band 540-1630 kc plus four short-wave bands covering 2.5-31 and 48-54.5 Mc.

Blectrical bandspread for easy tuning. Two i-f stage. Switches for automatic noise limiter, code reception and high-low tone. Phono jack for records. Headfones tip jacks on rear and built-in PM speaker. Temp. compensared to reduce fading due to frequency shift.

Sarin black seed cubiner with brushed chrome trim, 12%" x 7" x 7%" deep. Ship. wt. 19 lbs. Piano hinge top. Seven tubes plus rectifier. For 105/125 V. 50/60 cycle AC...



Model 5-76. Double conversion receiver. Value packed communications receiver with Broadcast Band 538-1580 kc plus three short-wave bands covering 1720 kc-34 Mc.

Electrical bandspread tuning control with calibrated dial to separate stations on crowded bands. Double superhet with 50 kc second i-f and grant 4-inch "S" meter. Five position selectivity, one r-f, two conversion, two i-f stages, temperature compensated. Phono input jack. 3.2 or 500 ohm outputs. Socket for external power or remote control.

Same black seed cabiner with chrome plastic trim rings. 181/2" x 87/4" x 91/2" deep. Ship, wt. 41 lbs. Piano hinge top. Nine tubes plus voltage regulator

and rectifier. For 105/125 V 50/60 cycle AC

Use R-46 speaker,

Now, at prices no higher than you'd ex-

pect to pay for ordinary radio, you can have all the thrills of short-wave reception, plus tops in regular broadcasts, too. You hear London, Paris, Rio, Moscowhear ships at sea and planes in the airpolice and military broadcasts-and you hear them direct with a Hallicrafters.

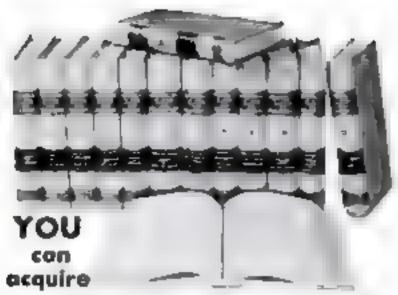
Hear amateur broadcasts from all over the world, and get in on the fun of the world's greatest hobby. And you'll hear them on the sets that these critical experts choose for themselves . . . Hallicrafters. For many years Hallicrafters has been first choice with amateurs, just as governments all over the world, including our own, have chosen Hallicrafters for critical communications.

Hallicrafters prices start at \$59.95 Write today for full information.



4401 West Fifth Avenue, Chicago 24, Illinois Hallicrafter; Ltd., 51 Camden Street, Toronto, Canada

World's Leading Exclusive Manufacturer of High Esdelity and Communications Equipment, Radio and Television



NIGHTS AT HOME! LL. B. DEGREE

LaSalle's famous Law Library used as reference in many Law libraries and Law offices has enamed thousands to master Law surprisingly fast, in spare hours at home, for business and professional advancement.

These 14 remarkable volumes, compiled by leading professors and lawyers, cover the whole basic field of Law in condensed, orderly, sim-

plated manner

You advance rapidly with this great library, plus special lectures furnished. We guide you step-by-step with personalized Problem Method of instruction . . . you learn by doing him-

dlinglepel problems—not by memorizing rules.

Send for two FREE 45-page booklets, "Law Training for Leader-hip," and "Evidence," answering questions about Law and its value to you and to sag how Larente Law graduates. are winning rapid advancement in business and public life. Mail coupon below. No obligation,

LA SALLE EXTENSION UNIVERSITY A Correspondence Institution

417 S. Deorbern St. Dept. 1183L Chicago 5, 111.

Rend me your two FREE booklets described above, without obligation.

A state.

Street.

Cay, Zone of State....

INTRODUCTORY SPECIAL Borgain way to try this great made-for-men deadarant i Send 154 in coin for regular 294 size -month's supply! menmen, box (2)). Newark, N.J.



Men. Boys, Hupters Fishermen mount and save your fovely wild game trophles. He a Taxidormist, Muun. Birds, Animals Heads, Fish, Ten skins you carn vasily quickly in spare time. Have a grand home museum. The fines and the greatest hobby anown, for sportamen Fun, reas profits. Yes, FREE, Beautiful strange, rangelite Book, te ing all also of Taxmermy Copts as over 100

Learn At Hom

brant for game pictures. And it a years FREE, of you rush your request. You can mount your TEACH YOU. So GRASP this opportunity. RUSH letter or postal for this amering FREE SOOK. Don't delay State your AGE. N. W. SCHOOL OF TAXIDERMY, 2611 Elwood Bidg., Denaka 2, Nob.

ells How You Can Learn

SEND FOR MY **NEW PLAN FOR A**

PMETALIZE BABY SHOES

Add to your present income or have a full-time business. Fill huge demand for most precuses keepsakes, Start at once-up big divestment. Complete instructions include all processing methods. It's fust and very profitable. Starr now - SIND NO MONEY - just name and address.

MINITARY CO., Bugs S-53(), 72(7 S. Brumbury, Lan August 1, Cal

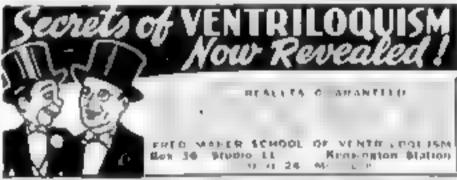
•Instructions Include Camplete Kit of Supplies & Recutiful PROMIED BARY SHOE



HE-MAN VOICE

which williams possessing this terms or ea-ter was Year-possessing new for a be in better or see the frepricht of our equations and our resul-ting to a matter research or over the possess with the pitter sensets, distinct a market was

FREE BOOK Frucht inger a group familier is to be the property of the property



Free Reek

o Prove S rength | Retrain accrete that changed the D m a M7 haust weaking to whose of the World's Most (Septemb) Sensi-billy San behave here to

That s a) , with (and 15 minutes a day to prove I can give you a powerful body of might and muscle with my quick "Oynamic-Tengion" method No removed for New and I II send you, absolutely free, my new

CHARLES ATLAS, Dept. 111, 115 East 23rd Street, New York 10, N. Y.

I ity was some mean amount and supplemental Statement

Sent me your Free Book which proves how "Dynamic Ten-1100° ran make me a NEW MAN

a - Age

I ve sken thousands of Tably men and a sen hem remedulmus Increa ed measurements. agracing arrength on a feet method dear ope was need to be for the entity of the book filled with pictures and leady facts. Find his him I can

thick post the huses in the het clief NEW Mith you had bet Mall company TODIT Charles attach, Dept. 121 121 East 22 54, M. T. 10, M. T.



45 POPULAR SCIENCE

I Average \$20 \$25 Profit An Hour-Over \$100 a Day!



"Pur Easy and Profitable Softing PRESTO Can't So Best"
"Presto is the cament selfing and most profitable stem I
have ever sold or seed. My
selling kine actually shows me
a profit of \$1.0 OD to \$2.1 KJ
per hour and I have yet to put
in a 5-hour day without showing a profit of over \$100.10 "

—M R. Stanter Mantate

Made \$275 In First S Says

"My first week my profit was \$175.00 for the 5 days. I have hit as high so \$44.00 profit. In one day Every sale in a thrill. I am cortainly idealed and happy as it is the most and earliest money I ever made in my life."



-Cordina S. Meltone, New York C. S. Wateren

AVERAGES 518.20 As Nous 'The 'natural of this devale in the Pilkstib First Kating Guinher ... because it is hardy in stee, symme to operate and in the right price range. For every hear I have devited to Pitheriu I have carned as average of \$15.20 as hour 'Fight P. Wedelite. Ohio - William F. Wydellie, Obio



Calla Sales Automatic

"PRESTO to the Inchest
money maker ever produced if
a man demonstrates intelligents) sales follow automati
cally I have made an excellent
listing with the PRESTO having
made over \$1 stell a month."

Stanfey Figura New York

Solla 58 PRESTUS In 18 Magazina

Tou should have named your extinguisher Miracie. Strong naming I betaken out to the office where I with and in 13 minutes I had noters for 10 est of a short Profit

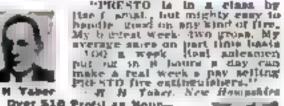
E17 'A By Fri av evening the
batance of I dosen were sold
and orders taken for a dosen
toppe I made a net crofit of 17
first day "-Richard E Needs. Obia





"At Least 20 a Day I am se ling a greater popular at a toner cout them had ever been presented before I are demonstration in a their and keeps me to received so that are ting down but become meanstantial I ten ty make \$200 at least, every day I wish.

If I have Pennsylvation Salis Average of 100 PRESTOS & Wester Part Views "INCESTO is in a class by



Over \$10 Protest an Hourin Spare Time
'Undertunate.' I am unable
to desore my full time to the
remarkature line To date I have
put in \$14 hours of work-at
a profit to me of over \$10 am
hourt'



Schonen 4

New Midget

Micacla Almost

Inc

Millian

Alcounty

-- Hugh Sadler New Jersey



He Saider New Jersey H Sadler

States Experience Hade Over

\$1000 a Month!

(aries has a of Texas had NG as as experience units to bad as well that he was featured as said up FHESTO He hid as well-una of the his th' in a said as as a said a said that he had he had he had a national as the said of the his th' in a said as a said of the his th' in the said of the his th' in the said of the his sa

WHO ELSE WANTS TO MAKE

Men From Coast to Coast Are Making Maney "Hand Over Fist" Showing Science's New "Midget Miracle" Presto fire Extinguisher

ALMOST TWO MILLION ALREADY SOLD!

WOULDN'T YOU like to be making the kind VV of money these men are making? Their stories (printed above) are examples of the bridant success that Presto salesmen are enjoying. If so many men-some of them without propious seles experience—are doing so well it propes that Proba is a 'natural" a red-hot product that ACTLALLY SELLS ON SIGHT!

What Is the Secret?

"Chorohromomethane" or "CH. The Germans developed "C B." as a secret defense against lire during the war. After the war, a lamous American firm, the Dow Chemical Company acquired the formula from the U. S. Government and began manufacturing it here. Then we (Merbte Industries) designed a bandy-yet amostogly affective-fire extinguisher to contain and telease thus new wonder-chemical.

So Easy to Handle! In comparing the effectiveness of "CB" in fighting various kinds of fires an authoritative testing laboratory's report states: "It has been proved that 'C B.' is about 3.5 to 6 times as effective as other common extinguishing agents on an equal weight basis."



B. Chlorobrimo or B. Ichlorohrumo-methanal the W. S. Air Force specifies for Fre-fighting in 8-16s. B-20s and other t. 4 air-craft No wonder Presto-puts out fires in as little as I seconds and is called wrience p. Bijdget Mir-sels. P. Mrtence #

This extra effectiveness of "CB" means that Presto can be made light and handy though for even a woman of child to use. Just a twist of the knob . . . and flames distopear! "Sella on sight" to Civil Delense workers, owners of homes, cars, stores, farms, service stations, boats, motorcycles, factories, offices . . . and to stores for re-sale.

Why Large Presta Prafits Are So Easy Everyone is terrified at the very thought al FIRE! Liery year fire kills more than \$1,000 people destroys over SEVEN HI NDRED MILLION DOLLARS in property Millions of people have been waiting for this sure, simple, Inexpensive anfeguard

Most people who are Presto in action want one of more-ESPECIALLY WHEN THE PRICE IS ONLY \$3.98 EACH! We give you dramatically sowerful termied sales material to 'talk free certificates lestifying that Presto B GUARANTEED FOR 20 YEARS'

> Advertised in Life and Other Notional Magazines

YOU DON'T MIED TO INVEST A CENT! Just collect and Reep \$1 or more every time you write an order we collect balance and make delivery (Or you can buy from us at extralow wholesale prices and make up to \$2 18 per unit-we'll send you details.)

Get Storted Now . . . Get started in this rich new field now Don't put it off Every day you besitate may cost you \$50, \$15 or even \$50 you could otherwise be making. Mail coupon NOW for everything you need to get started right away ! BERLITE HOUSTRIES, INC. New York 3, N. Y.

Folia Are Amered When You Tell These This New Kind of Protection Costs Only \$3.98



MERLITE IMPUSTRIES, Inc., Dopt. 1111, 201 East 16th Street, New York 3, N. Y.

Please send me Hipstrated salos literature, Hugal profit plan, order tranhs—everything I need to get started making good inturey introducing the Presto Fire Extinguisher to my occulty.

CHECK MERE IF YOU WINN TO ORDER A SERVICEA PRESTO TO USE AS A DEMONSTRATION (\$2 50) Pays for Hact many times over in increased anies Can be returned as often as you make for FREE refit! You needed endown we'll send Demonstration C D D Or if you wish to sake money unclose \$2.50 and we'll pay postage. Money back, if not delighted.)

ļ	Materia			,		,	٠			,			ı.		•	*		-	-	-	h	
ļ	Address	+			+	d	+	+	4		4	4		+	÷		,		,	,	-	

Zone No. any IN CANADA: Mosa Co., Ltd., 371 Down Street, Membrool 2, 7 Q.

The WONDERS

CEARS CISHING LUDES

DEN ZEIZ

WYREIT ?

UNIVER BIALS

DATE

FIGURINES

MANUFACTURE WITHOUT TOOLS OR MACHINERY! WE PAY YOU \$5.00 AN HOUR!

No previous experience or special ability en-quired NO TOOLS OR MACHINERY required the entire process to about as rang as jumping water old a, a glass. The WOS ERS OF LIQUID LASTICS make all be present a Many of the product a made with our road distance or an heart ful and attractive that we have created the unusual demand for this type of myrrana sel That a why we will pay you 00 H and bour functorials cattain to make the items. nown here and in our colarog for his.

UNLIMITED POSSIBILITIES

Work with Light in two it, Light D GLASS I GITT MARBLE LIGHTD ERROY LIGHT IN FIRST LIGHT IN THE LIGHT IN THE LIGHT IN PLANTILS and no amount of the light in the res and valuable process on of beautifu. mesided jowelry, naveiges process 1 librar ash This, keychain figurines, curies 40% to the control of the curies figurines, curies 40% to the curies and the curies for the curies for the curies for the curies for the curies and the curies for the curies and curies for the curies and curies for the curies fo with these person with these notices. No will can create and manufacture by the Cited Santas and at a city fraction of what a would cout by any other his hold dust sens the world cout by any other his hold dust sens the world was a fact that we will sent by a cur book " if we to make the participation of the way to make the participation of the participation morted to person DARRY neluded with our ole D4 page calat the open titled by the districted street street PLASTICAST CO., (Dept. A)
P 0, Box 5737 Unite to P 0, Box 889
Chicago 80. Hi effect told rate Pale Arto Calif





· · · PLASTIC · LAMINATING

Clair remarkables Phoetic Lampada-sia Machine who race their an four right a poor history. High hame right in pour histories the proble carriers my flow near borded because of the near borded because of the place of th

ENGINEERI

Big Demand for Graduates

APRONAUTICAL, CHEMICAL, CIVIL, ELECTRICAL, MECHAN-ICAL and RADIO ENGINEERING line. TV and Electronical.

t recede hit young man are earning \$1.5. CORPORERING DE CHEER shiptont y in this recognised invited a year stoudd meets on how extra start marterly. Many a wish a care a too or hor of their a sign extenses in this large industrial content.

aw station Competent instruction. Thorough, intense pracheat program Medern well-estupped taboratories including an object of informating and modern wind council lighty due tood nerror ton emphassed

Cov't approved for O 1 a Engineering proparatory courses Studients from 48 states and 21 foreign countries Enter Desember March June. September Send coupen for free catalog and full information. Studies and coupen for free catalog. and ful, information Engol now

--- SEND COUPON TODAY ---

INDIANA TECHNICAL COLLEGE!

6113 E. Washington Boulevard Fort Wayne 1, Indiana

Floure send me free information on B. S. Engineering degree in 27 months as thecked.

Aeronautical, 🔲 Chemical, 🗀 Civil. 🔲 Electrical, 🔃 Machanical, 🛄 Eagle-Televisies.

Name Address, were the second and the first of the second and

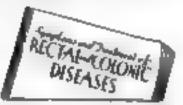
Dangers of PILES:

What Are They? How To Help **Avoid or Treat Them?**

FREE BOOK TELLS ALL

Actually, it's nearly always neglect of piles (and related disorders such as fistula and colonic and rectal troubles) that can cause such serious results. Learn how to deal with them without fear

write today for important free book to Thornton & Minor Hospital, Suite 1149, 911 E. Linwood, Kansas City 9. Missouri.







Living room 12x14 Moster bedroom 10x12 Norsery-den 10x11 Kitchen 7×10 Both 5x8 Concrete block built (a) Blue prints, material fists, exact instructions for 3 designs.

Complete T

SUNNY-CAL HOMES, Box 309-E11, Hollywood 28, Calif

FREE CRAFT CATALOG



120 PAGES ... Craft Supplies, Tools, Designs, Instruction Books from America's Largest, Most Complete Handcraft Stock.

Send for year free ropy NOW!

GRIFFIN CRAFT SUPPLIES

5626-6 Felegraph Ave. - Oakrand P. Calif.

NOW IN FOR THIS TRAIN Make money Know how to break and trush houses. Write today for this hood FREE together with special offer of a course in Animal Preeding If you are interested in Galting and Riding the saddle horse, check here () Do & foday—note.

SEERY SCHOOL OF HORSEMANSHIP Peps, 8812

Pirasant Mill. Ohio

Clean and Mathernal rugs and uphatstery in the bome or public build-has If how employed, you can on rate in spare time and build up a permanent profinble fuel time busi hers dient dealers can average \$3 though grost profit on service they render and IS on EACH of their rolen et National Price Guide charges lenro. quickly established.

DURACLEAN cleans by a surption! No reals aking or the place. Dist and greate touted pite vises enlors per vabes used ngala tama day.

DURAPROOF re a profes and carpet new exe barked by a National Money Stack

sh enough material to telgen your total Send for FREE busket TODAY

DURACLEAN CO

J-1800 Duraclesq Bidg.

Peerfield, Id.,

Madda YOU CAN WEATHERPROOF A WINDOW FOR 294

This is prodern weatherstripping . . . quick, thorough, economical. You just press it into place around windows, transoms, baseboards, No. rools, no tacks, and pracsically no time. Amazing MORTITE stays on indefinitely, yet can be stripped

off in seconds. Try it! Keep out chilly drafts, soot, etc. Hundreds of other plugger-upper uses the year around. 29c, 98c, and \$1.25 at stores. Higher West

of Rockies and Canada.

Write for circular.

J. W. Moriell Co., 534 Burch St., Kankakes, It.

POWERFUL! LOW COST! Light . Rugged . Maneuverable

A series e toot truck e has te totalds to was the In a table private parties of the pa

P O. Box 107 A 11 Muskege, Wisconsin



17'5 50

EASY!

continued if effective being two

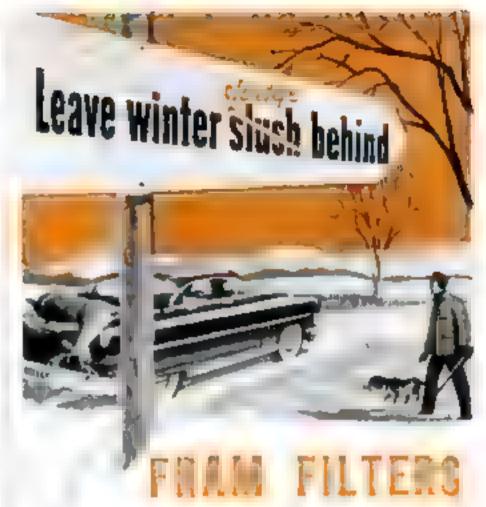
restreated of effective temptons and the ter apportunities. Proof togs at the ter apportunities. Proof togs at the ter apportunities, there togs as a second togs at the term are togs at the tempton togs and the tempton togs at the tempton togs at

New locator detacts metals, valuable minerals and buried tressure. Moneyback guarantee of superiority



Also guiger counters Govf. reward of \$10,000 for uranium discovery Write for FREE information.





save pep and power, cut repair bills

Whether you're heading for southern sun, a hunting trip, or just driving around home, you're better off with Fram-clean engine.

With a genuine Fram Cartridge in your oil filter your engine stays cleaner, peppier, more powerful. It spends its time going places . . . not fighting sticky, gummy, power-stealing sludge.

That's because Fram Filter Cartridges do a better job of keeping your oil and engine clean. They trap more dirt and sludge . . . and in tough winter driving that's important.

So why not see your Fram Dealer right away to find out, "How's your Oil Filter?" If it's time to replace the cartridge, insist on a genuine Fram.

Best life insurance year car ever had.

For the name of Dealer call Western Union (by number) Operator 25 FRAM CORP., Providence 16. R. I. In Canada. From Conada

Ontario

Etd. Stratford.

C. T. C. TRAINING IN. DRAFT

PREPARES FOR PROMOTION MORE MONEY SUCCESS



"Here I am at work making good money as a drafts-man, I'm glad I sent the coupon to Chicago Tech for that Free Trial Lesson and found out how easy it is to learn Drafting in spare time at home. Today, I feel secure in my job. What a more, I feel I'm slated for promotion and more pay

LEARN IN SPARE TIME—AT

(or at the College in Chicago)

A few hours of pleasant home study every weekthat's all. All the tools you need; drawing outfit included. This tested method developed over 49 years of C.T.C. progress—prepares men quickly for good positions in industry



PREE INFORMATION - SEND COUPON

To prove to you how easy it is to learn Drafting at home by the Chicago Tech method we wal send you this FREE TRIAL LESSON No charge for this lesson, now or later Fill out and mail coupon, or send post card today

CHICAGO TECHNICAL COLLEGE

P-331 Tech Sidg., 2000 So. Michigan Ave., Chicago 14. Illinois

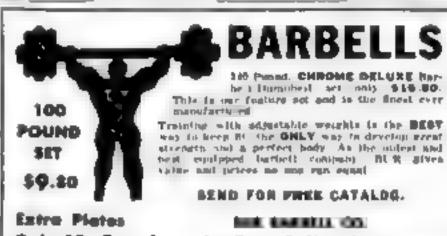
Ma I me FREE Lesson with information about hig opportuntiles in DHAFTING





FREE but if you get the lighter you have an actual demonstration of Import Values, Eather way WRITE NOW! MELENGER CO., Dept. 2431 1747 Westwood, Los Angeles 24, Calif.

Business. Opportunity world travel. You can get details slone



Only 10c Found

Lyndhurst S, New Jorsey





Rehind Peps 1 and yes. I was Americana with water in endanter to help

FWER (with order). Unphify giate, hinges and perfecution gauge! MATIGNAL STAMP SALES, 832 8th Au., Dapt, AT, New York 19, N. Y.



U.S. citizens have equal rights with oil companies seeking oil on public land. Without leaving home you can file for U.S. oil leases in oil states like California, Wyoming, Colorado, New Mexico, Utah, Montana, Some have profited as high as \$250,000 for \$250; \$11,000 monthly for \$200 by filing, letting others develop. Send for free booklet.

CALIFORNIA LEASE CO.

7075-PS Hollywood Mvd.

Les Angeles 28, Calif.

ECHNICAL DATA BOO

defined occurate and essential data for the scalence engineer. terbnical worker and bue ness man

Anchitec have Nome Heating Humination. Electrician & Dete Builder's Data Lumber Date Air Condilloning Reneral Math. Math Tables Physics Chemical Tables Metals Ben. Chemistry Reint Concrets

Swiftling Constr. Radio Television & FM Electricity, AC Electricity, DC AC Molors and Congrators Transformers, Welars, Motors Mydraul.co Surveying Mech. Drawing Machine Design

Piping Data Surveying Tables. Trig-Log Publish Metallergy Analytic Chem. Highway Eng Mech, of Materials Pur Trans. Mach. Thermodyn. This. h Charts Phys. & Therms-

Phys. & Dry. Chom. Machinists Data Well of for FREE cutaions cover 2000 pattings See for touristf how helpfus Librat can be to you send \$1.25 for each book. for the for any five books listed above) to

DEPT. PS-13

PHILADELPHIA 7, PA.

RICH CARBURETOR



the owners who are wanting money readily poor can in lease this to over rich intitures will be possible to learn how to save g and ne by VACU MATING OVER-RICH MIXTURES. Vacy Many fits all cars, trucks and tractors. Automatic and operates on the silver bare principle Fastly incalled in a few propiles.

SALESMEN WANTED! Big Profits

For FREE particulars, how you can notall one on your own rufor in councing, just send your name and address on a resteated in VACU-MATIC, 7617-15 W State St., WAUWATOSA WIS.

"REW" NYLON COVERS

machinery equipment, etc.

Perhapset albiest where ever made,
her lip, hen by on with 2 of the minbest re and the other of acts pyons
equipment services are surfaces. With not
bursters crack my opinion because
in the Projection against a hall place
with heavy charte of 5 day moneyhis hardenn ee Make chart very
main harden ee Make chart very
pinetics. Elve greep camp
by the desired the capacity
who because used a heaver welche
constitute to be the confor outdoor storage of cars, books,



DEFENDER TEXTILE CORP. 425 M'may, Dopt. PS. 3, M, Y, L3, M, Y.



LEARN MODERN WATCH AND CLOCK REPAIRING

Complete Course—Only \$5.95

At home apare time ! In ode soness and CARM white you trarm. La precision naturales a sort o great et l'arrange de la constant Clinton St., Dept 31.X 1, Chicago 6, 10.

Men and Women Trained at Home For

Prosperous Business in

Touls, Supported, everything accessary to get started sent faustraining shows both-progress racilly No per our er per ency necessary. Make over old furniture, sele for many risers Free booklet explains plan Bend name and res to COMMERCIAL TRADES INSTITUTE

1400 Greenlenf, Dept. V1-I1

Chicago 25, Ill.

Build a permanent business of your own with the world's foremost manufacturer of quality saws for every purpose. Sensalional new Perosylvania 5-in-1 Saw sails on sight. Made of 40 carbon spring steel, cuts through nais. Literally, it's the greatest saw deal in 50 years. That everyone wants and needs. Sell full or part time. Earn \$30 a day Write for FREE "money making" autfit today.



Gasoline Age...New Era for BLUE SUPER



With the invention of the "gas buggy," dreams of a truly pracfical self-propelled fire engine become a reality. By 1910 several manufacturers were producing gasoline-propelled fire engines that far autolossed the horse-drawn pumps still in common we. Shown here is one type of gasoline-propulled pumper used nearly half it century ago.

AC FUEL PUMPS

America's First and Finest

Just as the gasoline engine brought a new era to fire fighting, AC Fuel Pumps brought a new era to automobile performance—aupplying exactly the right amount of gasoline to the car's carburetor under all operating conditions.

That's why more than 115,000,000 AC pumps have been built-and more than 40,000,000 are now in daily use.

That's also why so many motorists—in order to maintain efficient performance and troublefree service-replace their mileage-weary fuel pumps with new ACs-first choice of both car makers and car owners for 26 years.



AC SPARK PLUG DIVISION



CENERAL MOTORS CORPORATION



Beautiful wonders of surpre. Som with property and give open words agon of dollars," teams that government — IT'S A H W HED TIMES MORE PARCINAT-INC shap cay either black of gardening or hobbie per may be exceemely profesble because multistant operations are new and new GROAF supplements AT Good Tools white easy. Think of the peaks of large crops when crees may sell for \$24 each. New Shart-and Sharkant lets you per breaks intermedy TARRY GOOT ASSESSED.

dept bis expert then you street Service Course of the page home with these MATE From Miner as Calebraia 2008 BARN TIPES SOLD FOR AN HORN AS \$2,000 EACH-but \$25, 550 or \$100 per the se summer You picket the profes Yes, propyrhang you upod no score growing beneated perfect Management Trees-and you don't risk one premy New operat plan of the managing apparenties BUNIFERS TENTO CATE TOWNS THE SECOND PROMISE AARD from homes, flower stops, one cont department, clubs, harely, Churches, principal designations, principal designation of the contract of the contract

MATHRALL MURSERT BARDONS, AND IL THE RES STORE, MILITARY & CAPTURE



Start As High As

\$3,795.00	A	YE	AR
MEN-WOMEN /	FRANC	CLAM INIS	TITUTE
Postoffice Clerks-		rerument ('onttolve?)
Reliway Postal			ep), F.80 4, N. T.
Accountants P		charge eroment	list of bur pay
Customs book tions how t	describit	sork etc.	Tell me
Many Other Early John Veteran's Get Pref- Rame			
COUPON Street			

LOW GVERHEAD-LARGE VOLUME SALES A SMALL PROFITS BRING YOU THESE "LOWEST PRICES"

TUBE GIVEN WITH EVERY TIRE AT NO EXTRA COST

WHAT GOOD IS A TIME WITHOUT A TUBE?
An establ shed Policy of Carolul selection, absures you many happy miles. Be wise-iry inte-you'll buy Misre! We welcome competition, NO ONE can touch our quality A price! 20 YEARS AT THIS ADDRESS. GOOD USED TIMES NOT BECAPS SEND THIS AD

YOU GET WHAT WE ADVERTISE Thousands of tires thipped all over

20 MONTHS WRITTEN GUARANTEE

400-18 BE 751	. 829-15 31 95	# V U · Z U	34.83 1 X 3 D 2	38 10
430-18 4 15	700 15 4 93	450-20	7 25 3246 401	9.55
700-16 4 75	420-11 4.15	700-20	8 15 900 20	13 46
		750-20	# 11 LOOD 20	13 25
		B25 20	13 55(1100-20	11 58
			ABANTEE-FREE	
EXTRA SPECIAL	, so morely b		ALL PRESENTED IN CO.	1000
600-16 \$3051	473-19 \$5.45	1 TOO- 15 (6)	58 8 1700-20	\$10.35
600 16 6 6 35		750-16 H	9:05 750-40 In	14 75
650-16 6 55		700-17	9 95 750 20 0	12.33
450 16-0 6 55		750-17	10.65 625 20	17 75
		750-15	10 25 900 20	14.05
700-16 6 23				
750 16(0 #.05		B24-15	13 02 1000-50	LO DE
528 16 B 63		EDO: 20	8 32 1100 50	10,10
330-17 4.23		450-20	10 03 1000-22	17.05
610-15 8.05	930-15 2.15	3218 A	10.35 11100-22	47 LB
700 15 9 55		32x8 101	13 15 1200 20	23.05
All White Walls				510 EE
	PROPERTY OF PARTY AND PARTY.		A A L A	

Thousands of tires shipped all ever U. S. A. All tires shipped p o s., waite. Send Check or M.D. with this all beet, S.

STANDARD 834 M. Bread St., Philadelphia 39, Pa.

Don't Neglect Slipping FALSE TEETH

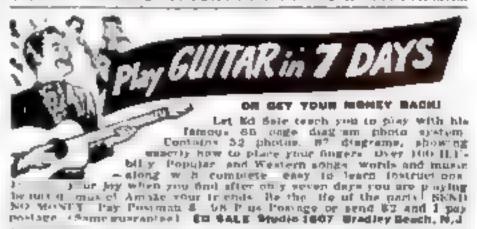
Do false teeth drop, slip or wobble when you talk, eat, laugh or sheeze? Don't be annoyed and embarrassed by such handicaps, FASTEETH, an estellar (non-acid) powder to sprinkle on your plates, keeps false teeth more firmly set. Gives confident feeling of security and added comfort. No gunnny goosy, pasty taste or feeling Get FASTEETH today at any drug store.

STOP EYE STRAIN **Avoid Accidents** LIGHT MITTHRAFTED PRODUCES I TIMES THE LIGHT

Attach the New Light Intensi-Ser to a 25 to 1 m watt builb and direct the powerful con-centrated beam where you ware if F e of for close work new or we cay and for natury it a hural for egitting out hatrahattmas Bellay. Unity \$1 (d) each postpaid



MONEY E ICH GUNHANTEE TO PS READERS LIGHT INTENSIFIER CO., Oapt. PR. 716 Yan Dyke, Datrolf 14, Mich.



Chicago School of Watchmaking No experience needed Writer

CHICAGO SCHOOL	L OF WATCHMAKING
2330 Milwankee Ave., Dept. Send FREF information on	4113, Chicage 47, 11 C Veteran D Home Study D Resident School
Name	
Address.	
Cit+	Zone State

PIANO HINGE Length 77 nin width (hickorn) Operation. rad as 275 degrees Made of er let als 6 feet engths only-\$115 ner length

MEAVY DUTY STEEL PIANO HINGE

Length 56" - Thickness 3 32" Width open; 3.5 18" Operat ing radius 1.10 degrees Made heavy duly steel. Dried ready for the Ideas for drop Inblue, heavy sunt buses heavy doors and many other uses where heavy inger are re-Quired Hold in St. leugths unly Struction of original cost \$1.45

Lt. Wt. Aluminum | LIVE RUBBER SHOCK CORD



Made an accordance with rigid unity specifical and read fresh stock by companie approx. It strands of live contains approx to strands of live surface a simple. In strands of live surface a simple of the strands of surface as simple or night of the first term of the surface of t

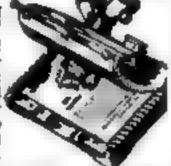
PRICE (per 28) \$2.00 \$2.75 \$3.25 DIA. 3 Hbs. 4 Hbs. S Ibs. Quantity price on application.

Proces F U B 15 cago for ode appr h postage on unders past tof n ad ance f 10 orders children 25% before rem C O D

Best 25511 5637 W. 63rd Pl. U. A. S. Corp. Contago, 18,

Prints Postal Cards!

Use on 50 Day Trial! Send name today for facts and PREB [Rustrated Book of unique advertising plans and money-making ideas for your business. Learn how others are boosting sales with post card ads . . . casy with Cardmaster.

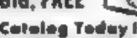


Cordmaster Co., 1820 Sunsyside, Dept. 1

FUN TO DO ... PROFITABLE TOO!

Textile Painting . Shellcraft Bunderaft . Metal Teeling Lamp Shade Making

81G. FREE



Complete supplies, everything you need Other Crafts



NOW, a RE WEST plating his the part to recognite any object tempters to any more and most more and most metal state of the market commedal objects with market cup
out the sur field of page 10
outs on order the strict in or
) on the strict may those Bro MONEY
fit or quare those ONLY 4.55
SENO NO MONEY or 10 ma end
C O O plus posture ON and to

Miney book in 7 days if her spinished

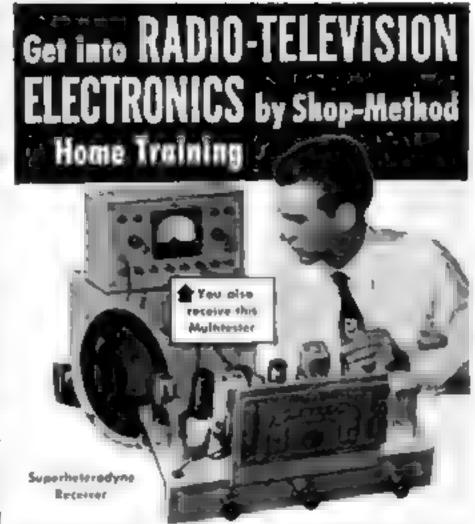
FROM ALL OVER THE WORLD for only plus FREE Booklet os Stamp Collecting

Big valuable imported enflection I define a abigs from close a of lines to get countries Brooker for it value yet al yours for only 2 r to mire-fore our Bargain Approvals. Included. FREE, helpful bookiet on Stamp Cultecting - shows you how to identify stamps. Money back if not delighted. Bund 25¢ today. Ask for Lot EH 14.

MONACO — Popo Piou triangles 50. MOLUCCAS - General MasArthur ML

UNITED NATIONS - But 2 inques — historia soti

ZENITH CO., \$1 WILLOUGHBY ST., BROOKLYN 1, M. Y.



good jobs await the trained radio-ty technician i

Business of Your Own + Broadcasting + Radio Manufacturing. Sales, Service + Telecusting + Television Manufacturing, Sales, Service - Laboratories: Installation, Maintenance of Electronic Equipment - Electralysis, Call Systems + Theatre Sound Systems, Police Radio + Garages: Auto Radio Sales, Service + Sound Systems, Telephone Companies, Engineering Firms, etc.

WE BRING NATIONAL SCHOOLS TO YOU! There is a place for you in the great Radio-Television-Electronics industry when you are trained as National Schools will train you at home! OUR METHOD IS PROVED BY THE SUC-CESS OF OUR GRADUATES SINCE 1005.

TOU RECEIVE AND KEEP Signal Generator, T.R.F. Receiver, Audio Oscillator and Superheterodyne Receiver, plus professional Multitester shown above. No cztra charges.

EARN WHILE YOU LEARN—we show you how!

This course also offered in Spanish & Partuguese APPROVED FOR G. I. TRAINING

RADIO-TV LESSON)

MASTER ALL PHASES! Got Master Shop-Method Home Training from an Established Resident Technical Trade School with its own Training Shops Laboratories, Studios a most 50 Years of Succesalus Experience in Training Ambitlous Men

ONAL SCHOOLS

Technical Trade Training Since 1905 LOS ANGELES 37, CALIFORNIA

in Canada: 193 East Hastines Street, Ventsever 4, B. C. BOTH HOME STUDY AND RESIDENT COURSES OFFERED

		_	-	 _						_	_	-	_	_		_	_						
FI	-		•	 -	,	^			24					n	ш		8	-			п		
		•	•			w	77	_	-				•	•	•		•		•	•			•

NATIONAL SCHOOLS, Dept. RC-113 4000 South Figueron Street Las Angeles 37, Colifornia

Mail in envelope or parte on postal card

Mail we EREE the book "My Future In Radio-Television.

& Electronica," togethe derstand there is no ol	er with FREE Sa	mple Lesson. I un-
NAME.		AUT
ADDRESS	_	
Check here if referes	d from service free the	и 4 учет одн.

WHAT: DO:*YOU*: WANT?:

Your Own Business? A Better Joh?

Substantial Sparetime Euroings?

 A Brighter Future? They're All Waiting for YOU in

FURNITURE

With upholitery booming you can do what Afters Clarke and him-deeds of other UTS product es has a duce. Well paid tobs for expert uphols prers everywhere. He work pull bost make good money working at home, or in your own thop Heat of all you an earn while you earn?

Now the famed N. Y. State approved I TS course is atas able to so at home. You learn rustom furnishere Upholsters respholivery talp rovers familiate fin-lead preparts 19.1 8 3 1914 FXTRAS alados corries, rushlor and drapers making tourse includes FREE of extra charge 1 HIG. Of TEITS of tools compare a france and a 1 materials to build beautiful fuz. I are aim a to covers but are sours to been or sours Many I Tel students earn enough in spare time to set STARTING CAPITAL for their own about What ther have done VIII PAN DIS-





Our PREE (man "A New Way to A Buchussin) Career" tells how you can propare at home for this Inscinating his pay big profit trafe witter TOPAY! Itee dept on hispatendownth in Upbelstery for the School Bent 25 1 1 1

15

UPHOLITERY TRADES SCHOOL DUST, 88-1604 721 Brandway, New York 2, M. Send me Ficht book on

C Busine Study C Resident Fraising

Name

Address.

Check if Kornen Veteren CHy___ Shapp.

DRAINS Cellars, Laundry Tubs; CIRCULATES Oil; IRRIGATES Gardons

Original Type F" Pump has 2400 GPH carriers 250 GPH 75 high or 1500 GPH from 25 we have any to to be HP meter DORS NOT CLOCK Only 18 96 postpaid if cash with or- 5

MONEY TO BE SENTER

Atso Bear Pumps in all stret-LABAMUS PUNIPS BELLE MEAD 3. N.



ocal Manufacturers this New Masonry

CAVITEX is today's masoury—colorful, streamlined, scientific. Yet with price appeal to override competition. Sue and proportion in direct line with modern architectural frends. Dimencions strictly according to modular standards. All the strongth, salely and endurance of mesonry at its peak point.

Outstanding Opportunities For Responsible Operators

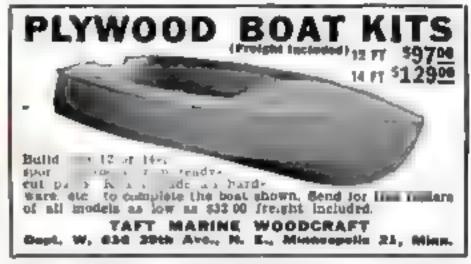


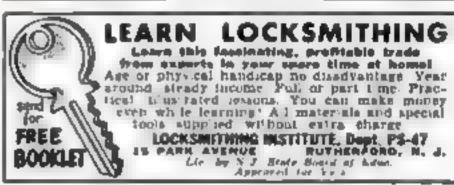
Cavitor can be made locally—of local materials with local labor. Freight and distribution costs are saved.

That a why Cevitex can be sord so low, yet still allow 100% or more mark-up on material and labor We supply basic equipment on easy rental terms. Erclusive privileges in franchiseprotected territories. Hundreds of territories open. Write or wire today for "Opportunity, Unlimited" free B requested, we will ten taltvery reserve territory descred.

W. E. DUNN MFG. CO., 416 W. 246 St., Habrid, Mich.









Wake Up **More Comfort**

Without Nagging Backache

Nagging backache, loss of pep and energy, headaches and dissinces may be due to slowdown of kidney function. Doctors say good kidney function is very important to good health. When some everyday condition, such as atress and strain, causes this important function to slow down. many folks suffer nagging backache—feel miserable. Minor bladder irritations due to cold or wrong diet may cause getting up nights or frequent passages,

Don't neglect your kidneys if these conditions bother you. Try Doan's Pills-a mild diuretic. Used successfully by millions for over 50 years. It's amazing how many times Doan's give happy relief from these discomforts help the 15 miles of kidney tubes and filters flushout waste. Get Doan's Pills today!

LEARN MEAT CUTTING AT NATIONAL Pay After Graduation



The steady dependable trade of Meat Cutting taught easily in 8 short weeks. You IEARN BY DOENG under actual meat market conditions in big modern school at Toledo.

For beginners or men with experience. Get a Profitable more of your own. Remember, PEOPLE MUST EAT! Big pay jobs, Free employment help, Thousands of successful graduates.

Buying, cutting, percentage, pricing, advertising, self-ing, etc. A complete retail meat education. National School established over 25 years. Get National training NOW Pay your tuition in easy weekly payments after you graduate, Get all the facts. Send coupon for FRFF 52 page school catalog—TODAY, G.I. Approved.

The section 12						al other			
N ni N									
Name		-					A	R#	4.1
54dress		,	, .	 , ,	, ,				

Skymaster Palm-size Radio



Owners report this amazing VACUUM TUBE ministers

Owners report this amazing VACUUM TUBE ministure pulls loud, clear reception up to 1100 miles at night. Covers standard broadcast band, \$50 to 1600 KC, Hearing aid battery powered. Powerful low-drain ELECTRONIC tube outperforms sub-ministure types ar transistors. FULLY ASSEMBLED . . . NOT A "ATT", Enjoy Skymaster at home, in bed, in office as camp. Make it your PERSONAL RADIO. Batteries including EXTRA "A" battery supplied at \$1.50 per set, 1500-ohm carphone with ALNICO PERMANENT MAGNETS as described in Sat. Eva. Post only \$1.45 with out. C.O.D. anders accepted described in Sat. Evo. Post only \$1.45 with set. C.O.D. orders accepted with \$1 deposit within U. S. and possessions.

SAVE \$1.30-

Assemble your own Skymaster Radio and save \$2,20. Lit includes picture diagram with instructions for radio beginners. Batteries, earphone as above, Ideal for schools, ALL PARTS GUARANTEED, Only

ACENVILLE, CALIFORNIA

Build your own JET ENGINE!



Order these plens today

1. JET PROPELLED BY TOLE Assemble 2. The PROPELLET BY TCLE. Assemble year own. Thete mad naturations if we. 2. How you have a viewings with the ENGINES. Neven sheets drawings with the formation and instructions if 2%.
2. HITH IF ABOVE in one order \$1.35, EDNI NO MONEY. Order both at mace \$4.75. C. O. D. In INA play out. purlagge Rend of the Money Order and we may postange. Get other information too. Bush Order.

J. HOUSTON MAUPIN, Dept. 46, Tipp City, Ohio

STUDY AT HOME for Business Success and LARGER PERSONAL EARNINGS, 43 years expert instruction-over 114,000 students enrolled. LLB. Degree awarded. All text material furnished, Easy payment plan. Send for FREE BOOK-"Law and Executive Guidance"-NOW1

AMERICAN EXTENSION SCHOOL OF LAW

Dopt, PS-40, 444 M. Micklyon Ave., Chicago 11, Illinois

YOUR LADDER It's EASY if you use

CEI Simplified Training & Coaching

Get in us the big wessey industry is offering for distance. CEI will teach you Drafting easily and quickly in your space time at home and help you got a job, Be like industry's leaders and use deling a your springhousd to mercen.

You Get This Professional Set of Instruments at no Extra Cost."

TO SUCCESS

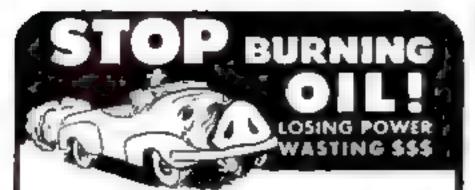
4 ADDRESS

SUCCESS воок

Extension Division PS- 11C

Cleveland 3, Ohlu) Mechanical t) Aeronautical NAME

> STATE Sta Obligation No Salesmen



When your car "eats-up" oil, loses that get-up-and-ge power, has peer gas mileage, it's a sure sign that you have worm rings, pistods, and cylinder walls in your englass. This is rebbing you of driving pleasure and valuable \$55 to the tone of \$250 every 10,000 miles in oil, gos, and repair hills.

WHAT CAN YOU DO ABOUT ITT

You can either have an expensive overheal job done or offget this wear with a

RING-RE-NU MOTOR RECONDITIONER KIT

It's the manponeure proven actives to a worn engine. This testified I-2 domb nation restores power and rip to your car without expansive repair wigh reduces all burning stackes are consumption, brings buck that "new ear" performance to your ear,

HERE'S HOW THIS BOUBLE VALUE KIT PERFORMS (

1 PVR COMPOUND—is a hard hitting engine reconditioner that removes sludge, tere, sticky greases from a tired, worm engine. Pour in carburator, lidie engine. Leaves ringe, valves, platean whistle clean, ready for . . . 2. RING-RE-NU — the amozing compound which when squeezed by tube on your pictors forms a tough, plichtunell expanding sent on rings and pictors to componists for weer.

RESULT! — You get power pechad, economical driving pleasure. Good for 10 000 plus miles. Adds years to the life of your car. Quaranteed not to borm the linest engine. Takes only 30 minutes to install.

Stand ACTUAL PROOF From the of 100,000 Seticited Hours!

Cadtrice Owner E. L. O. Lewrence. Mass writes — ' My that lac was burning 2 ate. of oil every 100 at less t have now travelled 4(4) mites since installing the hit Haven't meet one drop of oil. Further my gas consumption has been cut in helf. I'm more than pisseed with results — best investment forward made. '

NOTE: DON'T BUY HALF A TREATMENT!

Ring-Re No is more than just a senj-it's a complete 1.3 combine on FVII to clean vide carine, ReNt Ith-NU to seal in that 'new car' power.

I toled but 04 00 ppd treats all cars omegations of the second of the se runh erder tor



AGE

RICHIE DISTRIBUTING, INC. STOLE MADISON AVENUE & DEPT 6-1) & CLEVELAND F. ONIO

BMS-RE-IN) 5000 FOR YOUR CAR - GOOD FOR YOUR POCKETOOOP

NOW-for the first Time on Exclusive TV Service Training Program-7 months' Shop Training Qualifles You. Cat the inpide facts on how you can atup into the top-professional \$5.000 to \$10.000 per year bracket of TV servicing free book fails you how Master TV servicing QUICKLT by working on real the unsignment right in our BIG SHOPS and "ABORATORIES in America a Leading TV Servicing School Shop trained men get the better jobs with medicales win faster promotion—can demand better

WT) greduales win faster promotion can demand better pay develop highly profitable businesses of their own TGBAYI with the latest and most complete PRACTICAL PERSONALIZED TRAINING BEHIND THEM. Non-executed math and engineering theory emitted, YOU CAN EARN WHILE YOU LEARN LOW TUITION PLAN. Approved for Veterans WTt Graduates in Mig Demand. Send

mettem.	TELEVISION	?MSTITUTE	Papi.	M-11-8
		Angeles 15.		

for your copy of this lact-packed book NOVI+

Without abligation, please send FREE fully disstrated booklet. (No asiesman were called

NAME					_		
	_						

ADDRESS.

TOME _____ STATE

MINUTES TABLECRAFTERS' TUBULAR STEEL **FOLDING** TABLE LEGS



Scraw log assem hires to your table top. Golde belgs assure accurate assembling Sturdy, rustproof legs have safely wee t cellapse 638 easily for storage For bobby work, hanquet, buffet, game tables.

\$995 KIT FOR

If you send check or maney order, we pay postage Special discounts to institutions.

Opp't. F-11 TABLECRAFTERS 1114 York Ril., Abington, Pa.

MAKE YOUR OWN FOLDING TABLES



IT WHOLESALE

START A BUYING SERVICE at home. spare time. Get big-name merchandise for clients (and yourself) at up

to 40% and more below the regular list price. Make fat commissions. Folks eagerly buy through you to get sizeable discounts. Send postcard for details.

AMERICAN BUYERS' SERVICE, 631 SP, Lindon Avo., Buffolo 16, M. Y.



ONLY

Pastuald

.00

U# 10

407. OFF !

THE KIND MEN LIKES THE GIRLS LIKE IT TOO ! ! (VEST POCKET SIZE) They are loaded with rare cartoons Full of Fun and Humor. 20 DIFFER ENT booklets sent for \$1 in plain wrapper, No C O.D.

P.O. Box 89-K., 8klyn, 29, N.Y. BULCO, Dept. 745

DWARD P. CAMPBELL 3/3 School Street Baltimore Maryland



Prints Up To 3 Lines

for Clothes, Stationery, Checks, stc. %" x 2%" plantic case fits pocket or purse. Has automatic inker. Limit 25 letters per line. Order now for each one in your family, Prompt delivery.

Satisfaction guaranteed or money relunded. GIFTS & GREETINGS. Rockland 208, Mass.



THE POPULAR SCIENCE

Olivis and

		on this
not down	your suggestions Science Family	Memo:
Develor	Science Tarrey	

his year simplify your Christmas shapping and make sure you get the gets you want.

Check the following pages of the Christmos Gift Mart carefully for gift ideas. Jot down those you want for YOURSELF. And since there are suggestions for everyone, list the presents for the whole family on the handy Mema on this page. If you're in doubt, let the others in the family browse through the Gift Mart and jot down the gifts THEY want themselves.

These well-placed hints will cut out your shopping headoches and insure a truly Merry Christmos for you this year.

This year...be sure you get the famous

Let your tamily know that you want the lamous Mile-O-Meter this Christmas! Thousands of men did out that last year . . . and were "surprised" with the valuable and useful gift they wested. most! You'll join them

in saving money every mile you drive . it's what you need to miles per pilors, avoid highway breakdowns, and top engine performance

Simple to install on the dash of any car-no holes to drillall directions and fittings included

Court out of the second second

The chrome and black Mile-O-Motor actually pays for itself over and over agein . . . lett your family today!







Beautifully gift packaged, Meiled any-where within 24 hours. Add 35c for Special Delivery Money-back government

-	~~~				
	SEND	Offi	KE_	STA	MDARD
	MILE-	O-METERS	AT 5.	_	_

ADDRESS.

204d J

NORTH HAMPTON HEW MANTSHIRE

SALE HALL ENGINEERING, INC

PRACTICALLY WHOLESALE TO YOU



HANDSOME EXPANSION BAND

Maryland Distributors, Dept. 556 501 E Baltimore St. Baltimore 2 Md Write for Free Watch and Diamond Birth

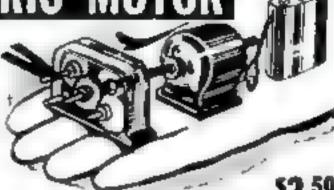
Catalog - Pr ct cally Wholesa e Pr ces

IT Jewes Swiss WRIST WATCH

\$14.95 SE 50 LES APW Incab och Shock Protected Water & Dust T cht

GEAR BOX Forward

REMOTE CONTROL POWER PLANT



ALL I UNITS COMPLETE Uppd.

WORK

The most powerful midnet motor ever to it! Wil drive your modes trains books plates care and construction bets with high special real power. Me some way I the line but turns up to those it post. Op special for any midget motor! HI MOTE CONTROL retersequickly with he new hower mant holding we equated flash ight but also lifest allow GEARS reduce speed as now as 51 r-p m. Works perfect with gones, her drive or direct frice Endless builts of far priparitions that North-Son shocks, and the hill Tollahl This territie midget in our great buy and remote con cut but my power plant to proces complete for only \$1.3 to old 25to if he eries are desired. Sond theek of frontey order and save on puscage

ELECTRO-KRAFT CO Book. B-25. Box 237 Old Choises Station, New York 21, N. Y.

WAY ENGLISH AIR PISTOL Uned Corne, Darry FFT Cal Pelistal Air Iffatal made in high and our dending in action, sutatunding in Arr Plated fracte in ling and our standard in action, satisfaind in to be the Third repl bard for thing placed has a handlessne bessel like chromie finish south and about the a quich paste can it standardard month pelce paste? See at standardard month pelce paste? See the Rend came 21 2 FOR, N.Y. I haven back, ber Order by mostly for, N.Y. S. and the k or Money before the finish pelce paste by the first Money before the first than the first than the first Money before the first than the first Money before the first than the f









は、大学を存在された。これのなかのなか

ADVENTURE IN THE MICRO-JUNGLE!

Christmas Gibt

Protess onat and Robby
All Instruments shapped in Atted
hardwood cobinets



VON STUEBEN
12 to 000 P wee
550.50 p.p. Media stage \$14.05
bith eatra across ries and oil im
mersion lega 23-1200 Power



##(DELBERG \$0 to 2000 Power \$310 postumes



NEW1 MARK IX
PRISMATIC SPOTTING SCOPE
20-30-40 Pewer

Full 6000 objective local 43 search go senge with cross hard and the first property of t

Special blacked letering and carabade. And this year cracker body Most restant of an interest surface. Short restant of an interest surface. Short plan ruggestions for his distribution in many like posterior in fitted by the surface of an interest surface. A \$124 value of and north a bar to get at a perce you can affect, little to get at a perce you can affect, little to get at a perce you can

PRECISION OFFICAL WARK IX Standing St que countries with Translates accepting action 1916 opening the Standing PRECISION Translated universal award broad with our agent broad act officers, postured 57 95.



Mobil 638 150 br 600 Priver 529 97 p.p. Merk stage 814 93



MODEL 200 100-200 200 Priver \$0.00 p.p.



MgD4L 600 20 to 600 Power \$30.05 postpard Mech stage 814 93



CHRISTMAS SPECIALI



EXECUTIVE INTERCOM

Complete System \$19.05 postpará

Normally world for \$40.05. Two ultramakers French planes were deal, ergological
Caractely and computated Bonn as me conleminary design of fath no construction,
Built in done a further specific Control
2 constraint to each cross a East to I
belefore range clarity and I termifies,
or ranches and family between a delarge, as a fact a Bock anti- batch.
Quality never approached at 4 corn
this price Two Phones and Crad et,
postpaid \$1 = 5 Tour batter sa
the oded Paulite Wate postpaid

De par foot.



MARK III

20 power telescope, spiral focus, conted lens, postpaid \$0.00

MONEY BACK GUARANTEE

One third deposit on COD a Colofresid, add 3 r state tax. All narryments made to Akron s-sendestions and imported by the Akron.

Schools and dealers inquire.

AKRON

55 Ahren Sidg. 4379 Sunset Blvd. Les Angeles 27, Calif.



44 Pp. Catalog FREE Macra-Marriel FREE

"你不会还有我有我不会,我不会还有我们,我们也可以我不会,我不会不会不会,你

Bunttement

Please sand me_

f encions the february and micro-manual in my order.

Name

Street & No.

City

State

AMAZING NEW ASTRO-SCOPE* & TRIPOD POWERFULI ACCURATEL COMPLETEL

0 1 0 1 0 1 0 1 0 1 0 1 0

Sky Itigh Value at a Down To Earth Price' Amaning New Ast Score & Como nation

another Big CHITEH

Hall bartabbe 2008 40%

GoX de wer adjustable

with 4 perc con tennes

that will brong distant

who a strict precious que

thmes elever (as s)en be used as sowerful compound in croscope

THOR - SP

t program

makes day emission as this moral to only pour brish son page

use it a christman Gift.

Bushing

A. All Builty of while

brass bround.

FIRST

for stage

d. Rula

STALLS!

error ele

like tument.

Astm.

die bl

91370

gut tilbreg.

hosuns

A maniglous

ready

ph payment

DEAL FOR

- Astronomors
- Students
- Hobbylste
- Scouts
- Sportsmon
- Flane Spotiers
- Tarpet Sputlers
- Mountain Climbers
- 9 Sea & Land Observers

Then I M I'm Office Money Back Querentes Sand Check or Manay Order DEPT PSAT

POST-PAID

attivat nit brice of \$8 95 331 CHUNCH ST. CRITERION MARTFORD 1. CONN.

A LUMING INCOME.

noak .

NEW Crosman for Christmas



Rifled barrel, .22 cal., high-

At dealers everywhere

powered air pistol for indoor-outdoor target shooting.

WRITE FOR CATALOG

CROSMAN ARMS CO., Dept. 44, Foliport, N. Y.

PAY ONLY ST A WEEK Electric

Seve Hundreds of Deilars

On Your Fainling & Spraying The new control test jet act on with out -pray control din. and eyu as et had all mean this just join it press to giver unit you re point long Mand, such of the life thank are made only No compress or needed A.L. MFTAL no subtog kå og pot sher at a men engta nur Copplanten i sorn Construct, footproof any free this Jet Moste a name, able only from as Speake a) parties actual og publice durce pa nile including public due pa nile incrusers enonice. Nat restlering do storant the then, for working rust print ing waverprise ng etc Bull for heavy duty AC current Entire on a every part laty LL Approved inc using 8 1 8 J. No preha Corn 4 Plug Set Included 5 extenues a disca 7' a pp Home Fall Guide " Sond # 0 #3 we pay Postner Or pay \$4 down and \$1 a week (or \$4 & month) L5-day Mobey Bock Guaranlee, e her way



Chornes or interest Addedi Entire Spreyer fil. Approvedt 25-az, Paleshed Almerican Contemper

Complete—Nothing

Else To Boy?

WALDORF SALES CO., Deni. PG-2511 363 Central Pt. Ave., Yorkers, N. Y.



MECHANICS BROWLITE

Fig. 30 Fig. 1 and 30 Fig. 31 Fig. 31

NOVELTY MART, 50 East Mh St., New York 1, M Y., Dapt 206

MALAYAN KRIS

strange oriental dagger This type knile

was used by natives for coremaniols, ancient rites and socrifices A truly different ande Genuine collector s

DIDED TOP den dask, or knile throw-

offered Not sald in stores. Your money back If not completely satisfied. Send \$3.95 to WHOLESALE IMPORT COMPANY, Box E-911, Albambra, Calif.

GERMANY'S BLUE WHITE & BRILLIANT

monogray handle. A knife never before

Beautifully hand finished

Coined blade 12's song.

High tempered steel deep

blued gun finish Genuing

West Continues presently spends on The Lorent of the Anneholica MALALL & a monder chall that a LAST.

But I William I A MARALL & a monder chall that a LAST.

But I William I A MARALL & a monder chall that a LAST.

But I William I A MARALL & a monder chall that a LAST.

But I William I A MARALL & a monder chall that a LAST.

But I William I A MARALL & a monder chall that a LAST.

Advisor String a Last & Marall & Last & Last & Marall & LAST & MARALL & MARALL & LAST & L

Largest supply in New England, Feltings -Bluepe nts - Books, Al prices W in Dept. PSSS. N. G. BLEUSTRATED CATALOG

JAMES BLISS & CO., INC. 21 Years in Buriness 342 Atlantic Ave., Boston 10 Mass

(OTORISTS INSIST ON **HULL AUTO COMPASSES**

 Because of patented features. and because of construction superiority resulting from Hull's greater manufacturing experience .. THE HULL AUTO COMPASS IS THE MOST ACCURATE MOST RUGGED OBTA NABLE, Prova if to yourself. Write for local dealer's name free literature.

MORE HULLS IN USE THAN ALL OTHERS COMBINED D CD (1.0 mm 244-E-11 -WHEN OHIO

Aleminated -SERE STUDENTS



A VALUE UNSURPASSED AMY-WHERE I Triple objective revolving lenses allow selection of 100. 200 or 300 power magnification. Max builted micro adjusticents Adjustokia sab-staje auron Body vs made to incline through 90° Complete in developed hardwood. cose, seel for student, sh, study of massin, sice

BARGAIN HOBRY

or hame marbonic. This pawerly tirela merer hann 2500 to 3600 RPM Hot it double-and shaft fired with an arter for mounting small stones, wheels, buffers, one and to hand should be \$2/32" and 1 '8" should be \$2/32" and 1 '8" should be \$2/32".

FLEXIBLE DRIVE-SHAFT IN HORSY MOTOR 36 inches rang and complete with measurary adapters to take, grinding, building, put string, this cate a very versatile banch test. 299



ARMY EURPLUS TOOL BOX

Here's a real value for the habitying

kinds of finger Chast Steel. Russforced corners, Woldest group hings, Resmy

out tray, Lacther fundle. Sico 16" 275 e 7"s 7". A SA 95 VALUE! CHLY



Another Policy Bergam News 24 secorted here clamps of verlows sizes & types, ideal for use un multo, Proche, Prochers, beats, pinters, pumps areme finest, swirdt 289

SARGET MIX - Another SURPLUS BARGAIN I This amounting min includes a THEASUPE of soul Springs and Clumbs Spacers, Bulls, Screens, ports such as, Cogs, Worm Cours, Wheel



A ... WAR SURPLUS BARGAINT NOS standard navigational acceptance on all Army Alexant Has a retating verge rungs sing, and heated its a degree in-

craments from 0 to 350°. Two para-In grid wices for N-S of ground, Ideal har existinger, beet, etc.



FOR RESERVE GAS SUPPLY Go lens. His acrew vep and with take standard flanchia rousin.

FLEXIBLE NOZZLE



other air gue, No pumping required set cock is and shoot Hos an ALL STEEL willed bore , 7-3. 4" tung. Shouts 177 cm:for, pellets darts, Ideal for targets at surel game. 1795 Blue steel finish. Fully guaranteed. dats, ideal for targets or seet game.



A very popular model for a types of radio, TV, public address systems, lab work, etc. this is full time strape and two quality. Rhm is 10 main diswith standard hale mounting. 295

A INCH ALNICO - Perminent magnet type a peglogs

9 PIECE

DRAWING SET Suitable for the erchitect, student, draft in man, orbist etc. Continue 9 separate e eces including one T divider, one Son Safer for open & 400Ch

Somper a in wheel adjustment it revers ible wordle heldt, one it. ' esting sen a in eath frontie, consule of entrolled to in q 2 Hop, replaced issued weeker book cose.

PLASTIC PAPALLEL RULER

eturny durable plantic with goods broke on top and tables ands an harrow to present a appingthis bevelod origin for pen & pent Tural

REP BERNZ-O-MATIC TOR

two old Mountains accounts there are self-contained furt 5 turnes unit that does a jetabuse intensa heat from a concentrates flame is needs & Absolutely 5 ICC spercead), High matrix steel (piece it replaceable fuel cyl.

PRINCIL PLAME TYPE - -- 10 hour sylinder & Albumer was BALY

EXTRA FIRE CYLINDERS -

NEW 761 HAND HOIST

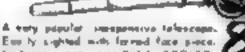
Strangest Naist for its me glit an the more had the LIFT 1000 be, but we give only) The exceedy or beauti, not form, on shop,

ptc. Commiss of 7 pullsy blocks, 00 fear of by fan Cord 2 Ny lan alongs and extens to be Easy to poch and carry life a es human gove hers 1/50

NEW POCKET HAND WARMER

Maintenn, a temperature up to 120° by realarion, Hoots from 16 to 24 hours without rediffing, time expendes highler food or whitegosa may Absolvely Salat Metal cone. Core Newting Elements for where a 7 for 75g

SURPLUS TANK SCOPE



Eur by aighted with ferred face piece. A Brees aunomiches FULL / EFONER

AVIATORS I AM 45301 GP(UP#00F

DUSTPROOF

GOGGLES NEW

With interchangeable, pre-

critical project fenter.

Charge of J less colors,

Ciner, Arthur in Green.

France ore rubber covered

with raft, charms, being

and been builten, from

Ingging" brantons. Adj-

nega her. Find-proof and

Dustigrapol. Electric bond.



MARK VI DRIFT SIGHT

Originally discional for second navigation, Can be used as simple promp talescope. Combine many unluckly prisons, lanses see Recording assure has spring resund motor readin bearings, wern good rung good ally six, three for A. other stores of value. Here is a pre-dis-sitprotesting of interest to the interest, undertained in accepted student, gargateer & hobbyrist. The detrical earth plate are worth for your than our space or Bargain Price.

NEW 8-9 TYPE AIR CORPS PARKA

Long Oaly 22.95

Some on priginal 8-9 Parks, Langth 12 Body of 9 oa. Gov's Salven. Mountain Cloth, Budy and sleeves furly bound with 16 are of authors 6 deveral week, the beary duty argument fesor with buttamented starm tob. Earl our abouton for used

hapf with button around storm culf. draw strings & angula strap. Com hos aloss a men across buck for enug fit. Two, deep, roomy a sale broost puckets. and large a de sockets - a fiertir torin finns. Butten denn steritter teks. Sternes hare nijustable call straps and one do test storm gotts. Colore Medican Scree - 34 46 - 127.95 C Her Crob. ~ 576 25

> Air Corps Type CAP Special! For the Hunter Comper, Former etc. Als Leither with anti-acoda litting & shoup-

Little e a

46im beaut, turn-down out floor, Long, leather coverad vision. Smoth Made scorpe a session of

MITTENS

Sheapston litted with building euror covers (deal for all lyane ed minter work Street and 269'



Can be soon with an without shore. Hos beduler Learner anima and rubber levels, Locas or the book has no buy of any calo most surger and her oil gover to rate of energy constraint mouther most Spies hour havey A Dea-SKID wood. The ideal cough weather land, as a feet may be. Home sea all as added a A

MATERARODA HON THIS SHUE PAC have Drinch, sturdy leather oppure and

a genuter all rubber stem writer a fall tenpe sich. Des greet to welle neer milmary shart. Gives complete at pentuction lens water, annumud, slush, etc.

ARMY SURPLUS SKI POLES

Laminated Steel, leather Inced. Wrigh strap, Also has lastile laced since ring, Metal No. Langth & No. These poles are FORTH 3 TIMES OUR PRICE!

HUNTING KNIFE

CEMUINE C.I. FOUIPMENT Hos it Brinch, polis aid Vinnelium Blade with handle Fiber diams Compy with

r turned leather should

Pocked with SENSATIONAL VALUES ... WAR SURPLUS, FACTORY CLOSE-DUTS and **GENERAL MERCHANDISE!** Fully Illustrated Thousands of Hern in Hond & Power Tools. Outdoor & Sporting Equip ment Hordwore Photo Sup-

plies. Foam Eubber Industrial Tools, Aircraft Facts, Metals, Plastics Godgets, Hydraulic Supplies & many, many more

Only 50 Wa'll refund it no year

SUPPLY CO ME ANNUAL SE, CAUP



P.075 40 with C.B.D.S. All iças 1990 (ya Ang

SUPER POCKET-PAL RADIO NEW HIGH POWERED 1954 MODEL

Tiny package of "ELECTRONIC MAGIC" only 2 mches wide and 5 miches tall . . . GLARAN PERFORM any other dio" avadable. Enjoy

while walking about anywhere . . tray bear bg aid carset insures absolute privacy Built-in TWO POWERFLL LOW DRAIN ELEC-TROY TUBES give

REAL MICK Sensitive error t receives nd standard broadcasts with perfect selecto my POCKET-PAL for 1954 featurer high power B hat tery and new long rig mercury ced Compacte PRE-FAB

set that anyone can assemble in one evening includes attractive metal case tones ai d'apec al ni mature parts . Only \$9.95, Batteries \$1.75 per set. Henong and flexion or carset shown

m photo supplied at \$6.75 wholesale cost or new any regular nize hendphone. Do not confuse that high quarity set with the gacgets osnasiv offered, if a practical porthole set could be barnt cheaper we would build it POCKET PAL IS SOLD DIRECT FROM MANUFAC-TURER TO YOU and if you are not completely delighted with its quality return kit for PROMPT FULL RE-FUND.

RUSH GROER TO-DAY-HOW!

ELECTRONIC MINIATURES

MANTEO, NORTH CAROLINA

POWER to

e telescopes in one:

Waters 18 ounces

The Ismout Amerdeanetle'W obem nati Telegrape Permits instant focus-

ONLY

\$9.95

ng ni 15k 20k thu ne din Tiera power tubu to click-on guarawerk Menaurus P closed 27 extunded Rust prant chrome tubes. Objective lans 40mm' All 12 outlend surfaces are COATED See 22 bulest holes clearly at 300 ft; Use also for Astronomical observation. With leather case and straps \$33.60 No Tax. Same day shipment by AIRMAIL and \$2.09.

Belock for discontings in I s found if not on, afted I not neders peatpart for her conservate an acpoint CNITED BINDS FOR SIGNA Mayor S. Handan to Dape Lak SNIE Charge In It boller comes were Man in the Boller and a fee let SLI Res WINTER



2003 West Chicago Ave. - Bept. P. 13 Chicago 22,

はななる事をなるなのの事を見るなる。



.22 Short BERETTA MINX

NOW! Only \$35.00

Your chance to buy this TARGET . plated in such attire in a new low part of the such at the low such at the price for the four inch such at 7 that Featherweight 11 on Agrandian Push Button take 533.50 down with 25 m barred 570.3 s. 6.8 Frader 10 the World 17 of \$43.65 at for to the product on the Modes of an

mather of posts her FREEL Brouging Luidbor Holster ODDFREY IMPOUT CORP., P-11, 277 Scandway, N.Y.C. 1 earder ha mer a



24 OPERATING BEALE MODEL SUBMARINE

Henry daugh his

The Manual States of the State e deten il enciore

More Speed & Power-Less Gas

With a powerful, HIGH-VOLT electrical system SELECT - A - CHARGE RECULATOR

With EZ Adjustable Voltage Booster Switch A SURE CURE for most chronic generator, regulator bettery troubles Free Details - How you can get Select A Charge Regulator on your car for introducing.

SCIENTIFIC ELECTRIC CO. P O BOX 2162 # CLEVELAND B. OHIO

BALLOONS GIANT THAT MAKE

Structions included. 37 g IT Giraffe a pard full of 12 kittens. Make a big Shiffs CLAUS. a set of REINDEER Sent Mangaroo FREE \$4.00 proer a balloon squawker. FREE With 56 00 order 50 ptestic toys. "A Complete Rodes" Add tilc for postage

PARTY BALLOONS 3100 in assorted colors & sizes.

PLASTIC TOYS

A complete Redes CIRCUS SALLDON , west, PS-11, Scaradale, N. Y.

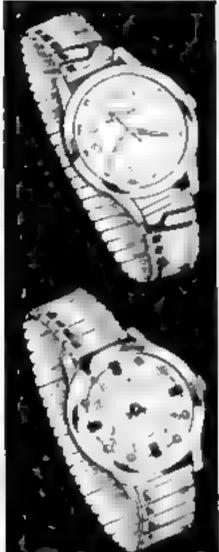
医食物质医食物质的皮肤质白色的皮肤皮肤液

100,000 NEW WATCHES HAVE ARRIVED FROM

SWITZERLAND! Your choice

IMPORTER'S CUT PRICE DIRECT TO YOU!

Pay LESS than SWISS retail price! WRITTEN GUARANTEE WITH EACH WATCH! 4 MODELS



SHOCK RESISTOR 1

Drop it.... Bong it! The staff Shock Absorber but into this remarkable watch is one of the greatest inventions since the creation of timepleces. Bases time worry, expense Lieal for act ve men school boys No. need to remove (rum what when playing baseball football, bowling Drop H! Achislly defles breakage Yours on 5 day trial your money back if you break it! Has N te-Glo namerals sweepsecond hand unbreakable crystal. Number 260 Tax paid price - a real bar-

ARISTOCRAT Newest 1954 Style

Latest word for smart styling for men. Smart imita-tion rubles & diamonds around dist Accurate dependable movement White GOID color effect case & matching band Makes a terrific impression every-where looks like a \$100 00 timeplece & st's accurate too Compare with watches selling for much more see it you can tell the difference' Don't let our low price confuse you. It has real quality. Order by No 203, Price, including

For Active Womeni

ideal watch for active women, typista, narsen housewives, or just school girls. Sturdy securate & feminine looking Sweepsecond band, luminous numbers. A hands for easy night reading. Eye appealing color of sterling siver. Danty yet durable Nyion cord with metal loops. You'll wear this watch with profe year after year Looks and actually works like much more expensive finepieces Come see it if the Most orders filled promptly Or-der by No. 218. Tax included price unly

Amaring micanny watch with mechanical brain" answers questions on distance & speed of fast cars pinnes horses. Measures distance and times sports, photos, distance puse bests etc Handsome' Precision made! Wins a imeration everywhere. Has features not found In more expensive watches \$ PINH BITTONS start & stop movement telemeter & tuchymeter dials, spilt second callbration. Numbers & hands glow at hight unbreakable crystal. centre aweep second Instructions and metar flex band included. No 236 Add 54c tax



TAKE YOUR PICK-TRY AT OUR RISK



Any watch sent on S-DAY FREE TRIAL-you must be derighted or your money back without ques-

NOW-LESS THAM SWISS RETAIL PRICE! DIRECT FROM IMPORTER TO YOU! None sold to dealers' No agents' No Jobbers' You artually pay LESS than if you went to Switzer and itsel for these quality watches' Written QUARANTEE CERTIFI-CATE as shown at eft given with every watch. Also included a line atretch band and gift box! You have everything to gain ing to lose' Send COUPON today Order several for back to-school and Christman gifts. Vialt us-Mon -Pri See for yourse,f'

THORESEN'S

352 Fourth Ave., Dept. T-58-200 New York 10, N. Y.

MAIL AT ONCE!

THORENSEN'S, Dept. 7-M-206

with money back QUARANTEE if I am not fully antisfied

- They want ancised, bend arana (d.
- Bend COD plus prologo.
- No. 265-Shock Rusister
- I'l Me. 265-Aristocraf
- "] No. 218-Ladies' Sporter.
- ™ No. 234--"Magic Beale"

ADDRESS

ECHNE ...

FREE!

New 68-Page Camera Manual and Gift Guide



Here's a free book that'll actually help you get better pictures. It a chock-full of helpful hints on information on all leading camphotography eran and accessories telling all about their values and benefits to YOU, If you or anybody on your gift list owns a camera, you'll want this valuable book. Send for your FREE copy today to Eastern Camera Exchange, Hempstead, N. Y.

Bept, A, EASTERN CAMERA EXCHANGE 66 W. Columbia St., Hompstood, N. Y.

Send me your CAMERA MANUAL-GIFT GUIDE

Name

City_ Zone ___State_

BENJAMIN SUPER CO2 GAS PISTOL SURE! Get a full scale drawing

MOST POWER PRICES! ECONOMICAL O CONVENIENT Many to operate the law nost Seda Custridges. Ca. 32 or Cat. 477 Regionals & C. Set Man & Digra or Ph. 31 35 Write Today for Chlustrated Folder of All Models Conjumin Air Biffen and Benjamin Air Pistists. NEW BENJAMIN CAN RIFLE AVAILABLE NOON

BENJAMIN AIR RIFLE CO., 852 Marten St., 21, Louis 4, Ma., U.S.A.



IDEAL

DRILL, BAW, REAM ... motal, pipe, wood plustic, Transitie, etc. Use with any clotters drill also drill press, lather or malling machine. Drills own starting bale—upper part of bit is used to tall the or ream strains, system, squares, or scrolls. Easy to operate ideal for expenders mechanics, electrical and alternation whiteholds. scroifs. Easy to operate ideal for corporters mechanica, electricians, plumburs, bubbyints, many others Abraeles remistant high spord steel. Flutes ground from saled, Will withstand severe continuous use without breaking, Resharpened at no charge. Takes plane of up to 550 in tools, 'a' dismeter 2' cutting sentions, total length 3' Available in three types—All Purpose Wood, Hunry Melat Secrify type needed. Bet of 3, \$1150, Details on respect. Bhipped name day Maney back quarentee. Danier inquiries invited ORDER NOW' SENO CASM, CHECK OR MOMEY ORDER.

ORDER.

Manufactured and distributed by INTERNATIONAL TWIST DRILL CORP. diff Wyandelle, Rm. 689, Kunsas City 5, Me.



Rogular Price of a Slide Evic \$4 and up med this coupon Add de Paulage you can use a pencil you can use a seide fuie

theepers accountants salesmen (Nguring commissions, ecc | , important. Men's most oters) tool Easy to calculate instantly. Multiplying, propertions, division, roots, etc. "High Vision" clear View Slide Poli 10" Rule, A. R. C. O. Cl. and K. scalet. FREE 28 page instruction book on how in get correct answers instantly without pencil or paper.

Gene Loewy, 545 5th Ave., Dept. 44-F, N.Y. 17

Limit there roles to each coupon

French DUELING SWORDS

Once used in deadly combat - now on exciting sport! Learn right at home. Fun -- sale" educations. These swords ore made of fine blue spring steel, polished metai

11-149 quardy, turned handles, rubber solety tigs. Fenting leaches quick thinking, develops coordingtion, posture. Since the Middle Ages, Europeans have emigred the sport of ducting. "New odve-cated by U.S. co leges. Set includes two swords and the booklet, "The Art of Fencing" Special mail order price YOUR MONEY REFUNDED IF NOT COMPLETELY SATISFIED Send \$3.98 to

OF TWO TH



HEW MAKE YOUR-OWN HORBY

ASSEMBLE KILS

Create nutbeacte replicas of historic plates As parts out to shape fittings step-by step instructions for sided Nov-Gulling a

c) den unt (ab à uffire dessination);
Adams \$4.05 Restachy \$5.56 Jefferson \$6.05
Cucling 2.50 Caff Frantier 2.50 Walther 136 2.50
Luger 2.50 38 Publice 2.50 JS Caff Auto, 2.75
Send cash check or money other Newsy Back GTec NEW ILLUSTRATED HORST CATALOGS Collector - Buthers 25c AM Manual Lat Size (4) Ship Model: Fill has Size (4) Holl Scale RR Size

Leachercraft I in (*50e estund in each OLKS MODEL CRAFT HOBBIE



SELECTED BAW MATERIALS

Catalog 56 feet for II

HAND BOOK-Higgingland Instructions on Making and Shorting Archery Tackin-78c

L. E. STEMMLER CO. Manorville (Sex 1) L. L. N. Y.

Kruger Pistols Wholesale/ *:

JZ CALIBLE SINGLE SHOT

Crafted ofter famous German Lugar design. Not on oir or CO^a gun. This is a small bore gun that actually shoots 12 colliber lead bullets fired by 14mg powder charge Seastiful gun ideal for target shooting. 4" steel barret, Overall length \$1/4" This amozingly low

price is due to small bore gun design, direct tactory-to-you sales. Ammunition at stares. Comes with 50 bullets. Your money back if not satisfied. Limited quantity Adults only. Send \$3.00 to KRUGER CORP., Kruger Building, Bez. 4U, Alhambra, Calil.



AMAZING NEW "SQUIRT" ASHTRAY

Automatically extinguishes forgotten algaraftes. A digoratte left burning on rest is

ensity and safety extingo shed by an ingunious device which releases a jet of water directly on it. Help is with plain water and dovices many tigarelies with each refilling. Metal 52.50 figure fin shed in bronze, mounted on sturdy Bakelite tray with gold tr m 5" x 5" postpord

Elephoni "Squirt" Illustrated. Also available with Fireman "Squal" or Sada Siphos "Squart". Plante specify the desired.

MONEY BACK GUARANTEE.

Places sand check or money order to Dept. 5-8

HOMECRAFTS, 799 Broadway, N.Y., N.Y.

WATCHMAKER'S SCREW DRIVERS

2 Journales a Secons Delivers. A much for avery bahbyist and madel builder litent for proc s or with camera

and the in cument regions in IDEAL Dup to size if Fibest tempered stee blades lowest pro-MONEY BACK GUARANTEE

X-MAS

IF NOT SATISFIED 2.00 CD D 63 pine postage or send

WATCH CO. Dept. 40 SO ELDRIDGE STREET 10. T. J. M. Y

SWISS MUSICAL CHURCH



Plays Silent Night, You can sell these as fact as you can assemble them. Beauti-(a) all wood 11 in, high with bears bell in steeple, stained utailaus, princess plue bushes. Gibstening Snow Regular. retailer So.95, Complete his Price \$3.95, Postputa,

PILTZECKER SWISS IMPORTS Wood-Ridge, N. J.

LEARN TO THROW THE BOOMERANG

A Fascinating Sport and Unique Gift

SEND FOR YOURS TODAY Flight Tested - Guaranteed to Return Golden Red, Jude Green or Notural

with Stary and Instructions \$2.00 au. & CARVED by Postpoid L COL. JOHN M. GERRISH

Catalog -- 3000 Novelties 10c

dend for the aniaging rations of neverties, live source, actentific supplies, hubb so, fundations, planes & beats, lumins, mapic leicks, leke artic et, unusual seeds gadget liminatives, cameras, aptical goods projectors, movies, lucky jews'ry, ratio our neve ties disquises, movies, lucky jews'ry, ratio our neve ties disquises, movies, suit & bite accessories, leiescapes, magnificer campaisses, hanks, smakers' gadgets, artists' supplies, printing sets, united, another, attockers, bit was & I fairs, fireworks, guns, rifles, ports, books, games, plants, etc. Seed name, address & 30c by JOHNSON SMITH & CO., Dect. 695 Detroit 7, Michigue

AMAZING NEW TORCH & KIT Neede FOR SILVER SOLDERING,

ing

Brazing, & 101 Uses in Home & Workshop Absolutely the Hundlest Salest, Most compact Torch yet developed. Automatic feed detachable free tamb, No pumping abundle feed detachable free tamb, No pumping abundle feed detachable flame over 1200's Each feel tamb sufficient for 2 hours steady meralism. Operates in any position, industra or out. 516 VER SOLDER KIT makes joints stronger than the metal light Unequated for mounting Riths Sights, repairing band saws etc. Ideal for all Repairmen, Hobby-file. Jewelers, Name Owners, COMPLETE OUTSTY—Ready for use—Includes One Impant Action of one tune.

fuel tunks, and Silver Solder Rit consisting of one tune RCEL-FLUX "53" party and 12 5-inch lengths of silver solder alleg, with full instructions, all for \$7.92 postpaid like C O to 1 YOU'CH alone with 2 funt tanks \$7.00; Silver Solder Rit atoms \$1.65 prepaid, Order your terch and hit tuday.

AMERICAN PRODUCTS Corp., 422 Sc. Georgers, Gopt. 2-L, Chicago S



In one simple, easy operation this wonder tool trimps serminals and connectors for safe connections. Supply of Terminals and Connectors inctuded with Tool free.

SPLICES WIRE

Makes quick, firm splice in damaged wife, preparing it for connector and crimping. Completed splice with connector is firm, next sed safe.

CUTS WIRE

Makes a sharp, clean bite through wire and involution, leaving no loose, straggly conductor strands.

STRIPS WIRE

Cuts through insulation, and when loose fabric is pulled off, leaves wire strands clean and bright and of proper length.



Thousands in Use

Electricisms, gazage and service station mechanics, maintenance mee by thousands depend on this wopder sool for all wiring work Ir et made of high quality total steel and it needed by every home craftsman. Satisfaction guaranteed or atoney back. Send check or money order for \$3.95. Post Pard.

American Pamcor, Inc., 1319-N American Bldg. Cincinnoti 2, Ohio



SPLICE



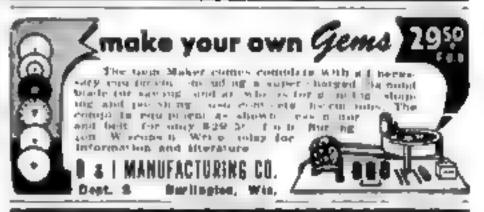




ACRE GOVERNMENT 40 LEASES-\$100

You do no drilling, pay no taxes, may realize a king-size profit without ever leaving home. Free map and booklet, Write to

AMERICAN OIL SCOUTS, Dapt, PS 7321 Beverly Blvd. Les Angeles 36, Calli.



Expiained in free Literature Anyone desiring booklet on hair growth and scalp trouble may obtain free copy by writing

LANOLE SCALP CLINIC

12800 HICKORY

DETROIT S, MICHIGAN



-low ductory percer 50 th, set....\$ 8.48 | 150 th, set. \$20.48 100 th, set. 13.98 | 200 th, set - 15.98 Orster by htmls; step, with order, hal, C.O.H.

DAN LURIE BARBELL CO \$701-8-11 Pitkin Ave., Dept. 370-L, Brooklyn, M. Y.

NEW FALSE PLATE
OLD ONE IN 18 HOURS
OLD ONE IN TO HOURS
AS LOW AS \$1495
Send at your old hinken granken or have plates and we to rate or them late are lightweight wonder platter plates. NO IMPRESS ONE
needed with our revolutionary method. We has your own old pin et
matched and replaced the QUARANTEE TO SATISFY TOU OR
SEND NO MONEY South as more name buler and mail RUSE

CHICAGO BENTAL PLATE LABORATORY - Dupl. Galb Sulte 807 Chicous 2, III. 38 N. Bearberia St.

CHAPLETE DETAILS. Begin to enjoy life right now. Clip this

er. . for free facts

PHONE. _

WHEN FINGERS FUMBLE

USE the SENSATIONAL NEW AUTOMATIC PICK-UP TWEEZER, Eliminates that "all thumbs" feeting when howding small parts, Alabas working with hal or add shaped objects easy. Reaches into and adjusts parts in crompad spaces.

Ideal for radio and T.V. repairmen, model builders, mechanics, and many others.

From top and three strong, steel fingers extend out. Balaccie and fingers close together to firmly hold object. LICES NOT REQUIRE CONTINUED FINGER PRESSURE Bugged Stainless Steel Construction prevents truting. Cones with handy packet clip. Order How.

WIN SALES CO., Dopt. 4-IL. Box 257, Forest Hills, N. Y. Due-1



STOP THE COLD! DUCK-ITOM



Real comfort in colds and climates for sports workers. Keeps face, neck and ears warm during long exposure. Worn over lace or under chin, Heavy, durable yet soft and flexible. Fits all head sizes. 100% wool Special price. Send 51 98 to WOOLWEAR CO., Box u. South Posadena. California

LEARN PHOTO-ENGRAVING



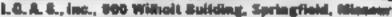
MATERIAL COST OF THIS CUT NO SELLING PRICE Make halftones, line cuts, atched name plates, placques, atc., for newspapers, printers, advertisers and schools, an equipment we furnish. Learn at home or in America's aldest, largest, approved resident school, New catalog describes great appartunities, talls you about success of others. Write for it today. No obligation! No selesmen will call!

TASOPÉ, DEPT. PS-11, AURORA, MO.

ANALYZE HANDWRITING

AND MORE SUCCESS!

FASCINATING, uncrowded profession-business, full or space time. Free illustrated lesson and year book shows how men and women in home and business find opportunity in any yeing handwell og Understand People-Make Money. Freelesson and information about amazing opportunities if over 21





WHOLESALE

ELECTRIC GUITARS HEARING ATOS

destribute pain there made becks trade needs as k up other mandomer man electric last ments et

1954MODELS UMOLESALE PRECEATALOG FREE home study course with

CARVIN CO. Work 38 PA-13

MAKE S5 PER HOUR GO. WITHOUT A PRINTING PRESS

PRINT colorful signs, posters hanners, fabrics, will paper, show cards—ANYTHING' Print on any surface. NO printing print or special squipment in needed with this amazing "approved" new printing morel. 300% profit on nearly every job. Easy to learn—NO EXPERIENCE or art ability nec-

-NO EXPERIENCE or art ability meamoney. Exceptional opportunity. Complots illustrated detailed plan and colorful sample FREE. Write.

SCREEN-PRINT COMPANY, Bept. 111 1810 St. Lee Augules St., Lee Augules 15, Calif.





The World's Mest Advanced Medel Airpiane

you're really the pilot when you take to the air with the Thimble-Drome TD-1. It obeys the slightest motion of your hand on the control handle — climbs straight up, dives, stunts, files upside down, does wing overs, rolls, loops. In a few practice flights, you've mastered the art of control line flying, and then endless hours of pleasure are yours, entering contests, joining model clubs, winning prizes and trophies in world's fastest growing outdoor hobby!

Abbibibibil. ready to fly model airplane. Also available in 2 minute assembly lut.) There's no gluing, cut, ag, sanding of parts, no complicated blue prints to read... not even a single screw to put in All you do is fuel up Thimble-Drome National Champion Space Bug engine, and start flying!

Look at the TD 1's WONDERFUL FEATURES:

Body of high impact plastic — takes rough landings until you get the "feel" of flying.

ELL METAL Bing exclusive with the TD 1 will not warp or twist. Symmetrical airfoil abouts high lift characteristics.

Citar plastic anti-glare cockpit canopy.

Meditanically controlled elevators.
 Resistic wheels, spring landing gear.

 1/2 A National Champion SPACE BUG .049 engine will ray up to 20,000 rpm, That's five times faster than a full sized airplane!

pp. 7 2 minute assembly kit, with engine, less accessories. Beautiful gift box. Just . . . \$15.95

See it at your Hobby dealer or Dept. Store. If not available in your town, send order and remittance to A

L. M. COX MFG. CO., INC.

P. O. Box 476, Santa Ana, California Model Auptanes, Race Cars, Fuels,

and Accessories





TO FRIENDS, FAMILY AND YOURSELF

IT'S QUICK, EASY, FUN TO LEARN

NGUA

World's Standard Conversational Method

SPANISH FRENCH GERMAN RUSSIAN **NORWEGIAN** JAPANESE ITALIAN

any of 29 (ungappes ovailable

A Lingusphone Language Set a monthing gift an involumble asset in buy now caves, school, armed services and sectal life

No Textbeek Can Teach You To Speak

Was LINGSAPHONE you bring a foreign land into your own hometory | 1975 S. and 15 till in other landings the same daily, natural way page earlied your combined strictly same bear a love for the following or other same same a NT H bit you here you bear unitive men and women make everyday conversation you Understand

You will be neutronal Endorsement. Over a milital bome-study etucents of all age

THERE IS NOTHING LIKE "THE DIFT OF LANGUAGE"-

STOP Wishing START Politing
Write finday for fact intend Fills, hook "Passport to a New World
of Opportunity" gives complete details Linguishoon Institute,
147-14 Men. Hocketeller Plans N. Y. 24 N. S.

LINGUAPHONE INSTITUTE 147 12 Meas. Rechefolies Plans. New York 20: N. T.

Rept and your Fifth, book,

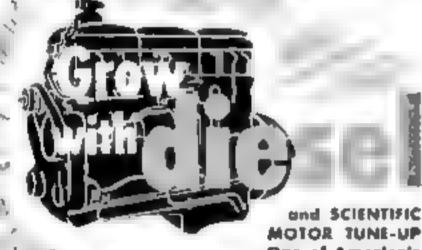
Language Interessed

Normal

Appletoplant

City

Zone Plate



MOTOR TUNE-UP

—One of America's Fastest-Growing Big-Pay Industriesi

Get ready how Make a place for yourto take advantage of the upportunities ahead. The UET Plan for learning Diesel is simple practice and is based upon the principle of searning to do-by-doing librades. Anto Ename Tune Up You get fundamentals through sometime home-study is lowed by actual shop practice on modern Diesel rightes Experienced instructors and you step-by step you learn the HOW and HY of Diesel operation service and maintenance that an the facts man the coupun and we i send you a free copy of Earning gu de you step-by step WHY of Diesei operation

we I send you a free copy of Karning Power in Diesel Mail coupon today

UTILITIES ENGINEERING INSTITUTE

Dept. DM-27 (Founded 1927) Chicago 14, III.

UTILITIES ENGINEERING DISTITUTE, Chapt. DRI-27 2521 Shelfield Ave. Chicago 14. Bloom

Please send me without abiligation, your free book "Earning Power in Diesel."

NAME (print),.....AGE....

ADDRESS

Zore State

Check here for information if you are under 17

SAVE MONEY! SAVE SERVICE CALLS! CHECK ALL TV, RADIO & PICTURE

MR TECHNICAL ENDINGROE PERMITTE Microphy Symbologisms Parmished BAFE - QUICK - FOOLPROOF from the first tree are due to a socket provided and been lamp and a category to be the category to be a cat

PERFORMS 1001 ELECTRICAL CHECKS!

Charles rentinuely of resistors, applimores, moserts of boy F or ries device . Standly built for long the of troublest stooting Test ends included No. 34. MODELLE Test rade meluded Sur the clar to buy SOLD ON 10 DAY MONEY ... SACK GLARANTEE Sec at at your dis ... continuer coday. If he east temps y order advect from facury \$3.95 Postpand anywhere on the U.S.

VISULITE CO., Supr. PS-11 423 Grandou St., How York 13, N.Y.

MONEY

MAKE EXTRA

Start Your Own Business Sell took to your friends, asighhers die part time—full time. A MILLION DOLLAR INVENTORY

AT YOUR FINGERTIPS Bond fit for etcars a n

Stanley, Miller Falls, Plumb, Cleaton, Wiss, and others of 30 to 50 % off.

STLYO HARDWARE CO., Dpt. S. 100 Market St., Philo. 6, Po.

51 00 98 range v from no will ne number them Make people when at your marvelous legaling and intention to be differently displayed with the next old them by the people with the result of the people of the pe Learn Short-Cut Mathematics Jugg v fraue.

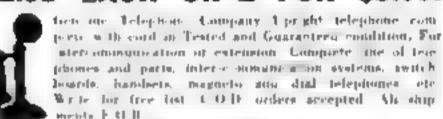
the title fact brokents above to be man-ored barge of oppy \$2.55 postput dop fort place post a 22 stories guaranteed of refuse to as the daying Short at Mathema or take

NELSON-HALL CO., 719 \$ Closer \$1,

Chicago 6, III.

62 95 Complete

OR 2 FOR \$5.001 \$2.95 EACH



TELEPHONE ENGINEERING CO.

DESCRIPTION, CA. BEFT. 4-1

FREE-Amazing Book on RHEUMATISM, ARTHRITIS

If you suffer the aches, pains and discomparts of Rheamatoin, as manifested in ARTHRITIS, NEURITIS, SCIATICA or II MBAGO, send today for the FRIE Book It reveals in po tant facts about why drags and med he give only tempoa virte e without removing causes. Explains tally a person, speciated system of ceatment that may have you want of I Carry Write for this FILE Book today

BALL CLINIC, Dept. 16. Excelsion Springs, Mo.

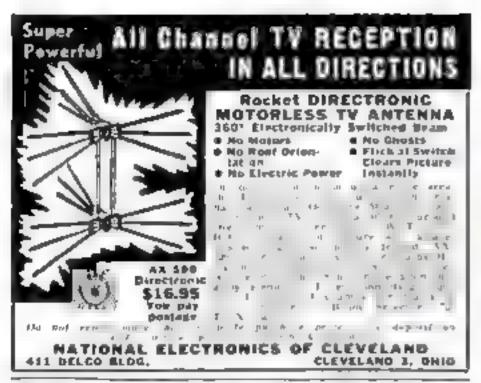
SENSATIONAL NEW LIGHTNING

ADDS & SUBTRACTS Amazing new adding machine skims through totals up to

MACHINE

thine skims through totals up to the state of the state o

WILLOW SALES CO., 838 S. 6th St., Albambre 1, Calif.





maintain rebuild-and re-cast Junk batteries into new with and without new materials, the latest achievement. We supply complete instructions and everything needed. Large daily profits.

LABORATORIES DEPT. PEM. MINNEAPOLIS 4. MINNESOTA

CLOTHESLINE ROPE LOCK & TIGHTENER

Door many with the healt tacks right put extrusing enginetty, analy filminaries supply elatherlines, signs duty on hour clays, tunt enpes Inn. Utad on Japa, wire as glastic line in any weather. Heavy stepl with rustpened time plating. Overentued 48c o pare. 3 gair for \$3.74, & pair for \$4.76 pp.6.



CLIFFORDS, 918 N. 4th St., Midwauken, Wis.



Deliers and 20 days of your spare time, you can build yourself this Beautiful Home. Jet 14 h e un be etch Bast Bandart Plat Say Windom etach easement windows Constitution etach paragraph of which was functing to ach, and diseased him by any thingspeed to their temps beyond the control to 1711



Became an Expert Body and Fender Repair Man The new 1953 edition of "The Key to Metal Bumping" is now out, 120 pages with 73 illustrations, show the Fairmount method of body and fender repair Read this Manual written by Frank T. METAL Sargent, the well-known authority on BUNUNU metal bumping, and you can become an expert in this high paying art. Order your copy today and be on your way to success. Mailed, prepaid, for \$1,00. FAIRMOUNT TOOL & FORGING, INC.

10610 Quincy Avenue, Claveland &, Obio :

Turn Spare Hours

into



a day

Every Car " Wigg-to-Clean" PLANTIN.

EXTRA! Get Your Own Seat Covers FREE!

If you want extra money . . . planty of it . . . day after day, this is the opportunity you've been waiting for! Just write your name and address on the coupon below, slip and mail TODAY for secretional new FILEE Sample Outfit that will start you right off taking orders from car owners everywhere for exciting new Key Products expertly tailored auto seat covers. EXCLUSIVE NEW MATERIALS and PATTERNS to fit every make and model car right up to date. One order a day can pay up to \$16.50 for a few minutes picasant work.

NO ONE can compete with you . . . in wide choice of exclusive materials . . . in superior quality . . . makilled perfect-pattern tenoring that makes every key auto seat cover fit ke a glove. Then you clinch the sale by quoting Key's sensetionally low prices that are just a fraction of what your customer expects to pay You shove those profit dollars into your pockets plenty fast from the first moment you begin showing the FREE key Sales Outfit . so handy and convenient it fits into your side pocket, yet packed with generous awatches of all our exciting materials. Take this outfit with you wherever you go! And wait till you see that BONUS SEAT COVER. OFFER ... that puts Key seat covers in your car as our gift!

No experience needed. Every car owner your prospect. No investment to make. Rush coupon for FREB Sales Until with actual samples. Count on Key for fast action and big profite!

THE N. CH	DUCTS CORP., Dept. 6311 rk St., Chicago 14, lil. Betople Outfit at open.	
Name]
A4dress		
City . You don't	Sone	
Make .	Year Model	



SEND NO MONEY MORE THAN 4000 PAGES 2750 PICTURES

BOOKS !~ ESTIMATING, CONTRACTING

Examine this Up-to-Date Edition for 10 days. See how these hine books supply easily understood training that will help you to get a detier fob and make more money, or start a profitable business for yourself. Think what a BIG help it will be to have them handy for use in solving all sorts of building problems

Learn to draw plans estimate, do all-new construction and modern remodeling to meet fast growing demand. More than 4000 pages of practical pay-raising information with 2750 helpful Blustrations on such subjects as blueprint reading, concrete forms, masonry carpentry steel square electrical witing plumbing heating painting and hundreds more

In our more than 10 years we have never offered more complete building information. Send the coupon TODAY

(A year's consulting privileges with our engineers now given with these books without extra post)

AMERICAN TECHNICAL SOCIETY-Publishers Since 1898 Dept. G820, Draxal Ave. of 58th St., Chicogo 37, Ill.

I would like to examine your D. Volume Set of Building Estimating, Contracting Books. I will pay the delivery character only, but if I character may return them express context if after I days use I prefer to keep them. I will send you be a postage and tap the best of all the rate of only by a month that that has been paid include constitute earlies as of only by a month that that has been paid include

Namo		_
Address		
City	Rtate	

Please attach lutter giving employer's name and address if welf the year give business man reference? Men in service please give bome subtress

FOR AMBITIOUS MEN



Have you had your copy?

120 pages of guidance to best-paid positions. Up-to-the-minute information for men who want to climb to the top. Tells how to get promotion, security and better pay through home study courses. This handbook "Engineering Opportunities" is free and entirely without obligation. Send the coupon. Make this your big year! Describes over ninety

Aeronautico Televation Barrishte 8

Electrican Automabile A.M.I.Mach.E.

courses including

A. F. R. Au. S. AMICE. B.S. (Pure Science)

--- SEND COUPON TODAY ----

Canad an institute of Science & Technology kimited. 50. Century Building, 412, 5th Street, NW, Woshington, D.C.

Please forward free of cost or obligation your handbook, "ENGINEERING OPPORTUNITIES"

Address

Course interested in.

Age

Conadian Address: Canadian Institute of Science Garden Building, 263 Adelaide St. W., Turonto, Out.

Sensational Device Tests Eyes



SAVE up to \$15.00 on Glasses! Big news to the militans of Spectacle Wearers and Prospects. Means Freedom from Outrageous Prices. Sold on Money-back Guarantes.

MAKE BIG MONEY QUICK—FREE SAMPLE KIT! Show it to friends and others. Let them use it Free and watch their amasement over this fielf Testing system. Here is a great new opportunity in a tremend-us new field of unlimited possibilities. Apare of full time. No experience needed. Write for Free sample kit.

C. G. Optical Co., Dept. A-202, 20 E. Delaware Pl., Chicago (1, III.

Life is law and never tuck!

Create the future you desire by learning to control your subconscious mind. Free booklet. Write to

KEY TO POWER

Dept. PS, 7321 Beverly Blvd,

Los Angeles 36, Calif

ELECTRIC POTTERY

Build at 1/2 retail price with our large blueprints and Concise instructions, exactly as we've built nearly 500! Plans for our 12" x 12" x 13"," deep Hobby Kiln & 18" x 18" deep Studio Kiln. BOTH for \$2.50 Postpaid.

Send 25¢, refundable, for new Mold Catalogue,

POTTERY-BY DOT

304 Morth #3rd \$t.,

Seattle 3, Washington



JUDOI DANGEROUSI AND PLAN NO MANY WITH ALL ATTRU "THE DUMEN THEY OFFICE FARY POLLY EXPLAINED Outch the result of the same of the terms of the same ACE SUPPLY HOUSE Muncer, Indiana

WEBBURTELE

SURGERY HOSPITALIZATION

NOW there is a new modern Non-Surgical treatment that permanently corrects rupture. These Non-Surgleal treatments are so certain, that a Lifetime Certificate of Assurance is given. Write today for dur New FREE book that gives facts that may save you painful and expensive surgery, and tells how non-surgically you may again work, live, play and love and enjoy life in the manner you desire. There is no obligation. Excelsion Bernin Clinic Dept. 3797 Anteinior Springt, Mu.





Complete guille to E erything in Haulo. TV and Electronics for Deaters Services men Schnois Amateurs Bloadcailers, Public Utilities Engineers Experimenters, Factor es and Laboratories,

BURSTEIN-APPLEBEE CO., 1012 MeGIE ST., MANSAS CITY, MO.

TRAILERS FOR SPORT OR HOME FROM \$399

A size for every need from 14' up. High strangth steel prefabricated chassis and frame work, Factory made parts. No experience necessary, Kit of took with electric drill furnished. Send 25¢ for comple plan and literature.

MIDWEST METAL PRODUCTS, F. O. Box 272 Elibert, Judices



Good grates best around? Breezes table Ar a whiting for all you can ship Men & Mother get ready form for next spaces. Hend I pend digital you New tash cells have Send for my Hundrated FREE felder today. Do II should

F. C. Con 500 New Orleans 12, La.



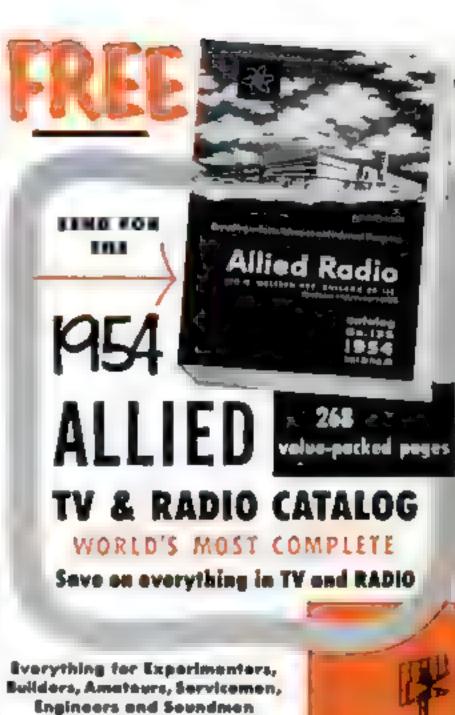
with the real Radio fathet Attaches in a pirty full instructions given Swall for 'Darries' - 'cut in' on or 'Sid' register network programs or put on your own broadcastal Amaio your friends - cod fun Brau fu Wein to Plante 6 in high!

17 case needs to be come at the party of the state of th

SEND NO MONEY Just pay poterum. 12.16 COL plus peringe or send El 10 and to my potent Rail o Hills is published and firsts of by potent Rail o Hills is published and M dway Co., Dept. MPE 11. Hunray, Web-



ing, ice fishing, freezer-locker work! Keep feet warm, dry! Gavt. cost \$25 60. All sizes. FREE CATALOG! 10.000 Sorples Hous! GOLDBERGS' - 218 Market St., Phila. 6, Pa.



Send for ALLIED'S big 268page value-packed buying guide to everything in TV and Radio! Largest selections of custom TV chassis, TV accessories, FM and AM radice, High-Fidelity Sound, Amateur supplies, P A. Systems, recorders, test instru-ments, builders' kits, industrial electronic aupplies plus the world's largest stocks of electronic parts, tubes, tools and books, Get everything—get more for your money—send today for your FREE 1954 ALLIED Catalog.





ALL	 _	

ALLIED	RADIO	CORP	., Copt.	7-L-3	
100 M.	Western	Ave.	Chicago	80, IIII	nels
The second	FREE 10	SEA AL	1150 246		Catala

The second	EDGE 10	EA ALTERNA	246 8	Caralan
MAN TO SERVICE STATE OF THE PERSON SERVICE STATE SERVICE S	PACE IN	ATHEN	266-Page	Caraioa
			-	_

Name —		
Address		

NEW SPLITTING SAWS WITH MANDREL



Ass't of 18 SET Lettell'aged 150 Brittium and Blotting 86W3, plus uni sersal mandres for M" and M" chucks D am 1%" to 2% Thackness from

0.5 to 102 Limited Quantities Specia, Price . . this month only.

HIGH SPEED HAND TAPS

Complete set of 10, from %" to %" by six cenths T 1 S. Both N C and N F \$11 00 value for only... \$2.98 SET 148

A.1 MERCHANDISE—SATISFACTION QUARANTEED OR MONEY REFUNDED

MICH SPEED STRAIGHT SHANK DRILLS



30 selected E 6. Straight Shank Drills up to W' ш Lengths up to 4", only

12 Different Sing R S. SET Straight Shanit Drills 123 lengths up to 3", unly \$3.49

10 Different Size U.S. Morsa Taper Shank Driet Lp to 1", do ly.

ITEMS PREPAID PREE WAR CATALOS

HIGH SPEED WITH 1/2" SHANKS 5 Different Size II S Dr i m in to 17 These c'stee Drills c'shoo Drills with 19" Sharks can be used in a 19" Electric this or a 19" capacity lathe of

57 95 to Indeprent Size H S Dir cha blanks 1130 Same as

High Sured Strarght Shank Cherking Renniers LET Inderent une i E Straight Shank Reamers up to 1108 \$4.95

3138

LEARN MAKE EXTRA AT HOME MONEY

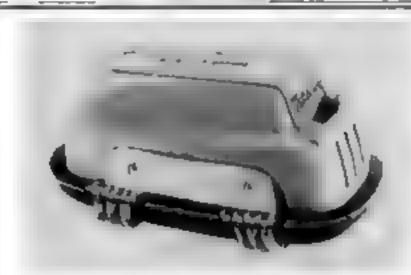
LEARN HOW There are RICH OPPORTUNITIES for MEN and WOMEN 10 HAXE with "know-how" in Planters. Interstate's new Planters empray Sand-welling tells and shows how to make handreds of last witing stems and PLASTIC of Plantics. Given complete training in fabrication, rusting, NOVELTES lammation, molding internal carring etc. in sample energ, PURNITURE step-by step language and picture. Planter and Fabricating Kets for 23 vanisable Plastic draw came with training at an HWELEN SIGNS CHITA FORE START A PLASTICS BUSINESS OF YOUR 1015 QWN. No other lashetry holds such processe for the Between You can make but themey tootted scriping nonelties, tays supu. etc. in your own home so space at full tions Don't won! Learn NOW how Interstate a Planting Training qualifies you for sucrem in the Plastics field.

PLASTICS AND PUPPLIES PARTITIONS FOR 23 VALUABLE PROJECTS

ERSTATE TRAINING SERVICE

Dont. C2M

Portland 13, Oregon



VITALIZE

ELECTRIC VIBRATOR FOR USE IN THE HOME!

At lust—a really fine Vibrator that's within the reach of everyone! Now you can enjoy the wonderful wanted feel so good and is so good for you'

Inst all VITALIZER over your hand flexible spring straps, mounted on comfortable sponge zubber cushion. adjust to fit any hand Flick the handy on-off switch. Thousands of vita, massage pulsations pass through your linger tipe to arms legs body scalp help stimulate circulation, relieve fatigue tone up muscles

 The pressure of your fingers determines the degree of measure gentle or vigorous. VITALIZER is light-weight, beautifully designed, precision-engineered for y are of service and enjoyment. Pleasant easy to use and amazingly low in price for a quality massage in-

 Only \$9.95, plus 50c insured postage and handling. AC only, 6 cord, Fully guaranteed, of course, Order now!

HUGH CLAY PAULK

304 Kenses Ave.

Dept. 5-3

Topoke, Kuns.

to introduce our new Active Man trum pad onser, wal send every trust wearer a pad-Aliso-LUTELY FIRE (reg. 21 value). Fits any trust, ten her light replainty soft composed of not home of they be tooks that provide in cast southing support and increased confect. I had give rifttion, stope (russ channe burning and sousing Write for your Fithe pad toda)

ACTIVE MAN TRUSS CO.

549W RANDOLPHST Dopt. PS-11, CHICAGO 6, ILL.

ave 6¢ a gallon on Gas? "Even more!" hundreds report with TUR-8-LIZER GAS SAVER

Tested in militions of males of drivers on overtar specialists the Turn-Liver is test approximant dies so need yet Kany to Install postació as male or tractor. Turni Liter supportes das resistantes manies, Send 14 for for 8 cg. [proceedig 83 00 for 6 cg. (pp. Ter In de Liter 30 days, You'll laye it had if not 100% comps mail it back and we'll re-

Salesmen fund pronte? Frita

UNIVERSAL TUR-S-LIZER CO. 628 E. State St.

Milwaukap 2, W14.

56"x356"x

856"



PUT HYDRAULIC BRAKES ON YOUR MODEL A-B OR V-B FORD

I was them Inch. with Abact a doing of a con-Westian but All parts and instructions furnished Mode: A 2 and 1942 to 34 Fords 078 1975 to 1978 Fords 980 00 Add 010 00 to above prices - 83-Pt NDARIF core charge on hackers & and able, includes speed tuning information

ANSEN AUTOMOTIVE ENGINEERING INC. MORMANDIE AVE., LOS ANGELES 44, CALIF.

DENICH Bell-Tranke line filter aliminates nainy interference Bell-Tronke has after differently soldy interference raused by motor appliances. Saline, oil burners, etc. simply page radio or TV cord anto 0 ter and niter into wall socket Enjoy Bell \$1.00 C say reception. Send \$1 ppd No C O.D. \$1.00 Try \$ days Money back guarantes

TUBE WHOLESALERS CO.

Box 364 Deet P3-1 Rockettle Centee, N. 7.



SLINGSHOT

NEW - ACCURATE - POWERFUL jurge rowen with arrows, rocks, pellets, shot! Only panamor has I rubbers and self-centering pouch for power and mentacy. Hast small game, pests. Time for target practice. Heavy

Imminated stack, 40 stack halfs, extra publicate, except implement



Accurate arrow finde

SPECIAL Two 10" Arrows \$1.00 Fed. BULLEBOT CALES CO Deput 11,000 12 32 Los Ange es 16, Calif

BOOKBINDING AT HOME

WITH A COMPLETELY NEW-SIMPLE METHOD-DURABLE PROFESSIONAL FINISH- NO PREVIOUS KNOWLEDGE NECESSARY- NO EXPENSIVE TOOLS-

SYSTEM USED COMMERCIALLY

A Complete Picture Description—Step by Step a Child Can Follow

REBIND YOUR BOOKS
AND MAGAZINES WITH
A FULLY ILLUSTRATED
BOOK AND A JAR
OF QUIK BINDING
FORMULA FOR \$3.00

VICTOR	PUBI	ISHI	NG	COMP	ANY
100 Gra	nd St	reet,	N. Y.	. 13,	N. Y.
Enclosed planning at 1	case find Home and	g Ljar o	for f Quik	a copy Binding	of Buok- formula.
Name					
Street					
City			Zone	State	*****

2 OR 4 WHEEL DRIVE FOR JEEPS IN SECONDS



AMAZING NEW WARN HUB

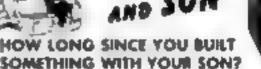
Then your I where he se Whing I a are perpendicular record about the se Whing I a are perpendicular record about the labor of the second at the seco



PLEASE

FATHER

PRINT



NAME AND



Here's a weekst case you and your sen can make at home-with the SCHWPIZER buse United for Essetive argented elements of cheet metal warring and blueprint-reading, yet require only common hand tools. But is ready for essentily and metales world room set Makes light strong, restpond atomicism lifelity Cases also for Eshing hackle tools, roller states, or special year fit complete, ready for examples of 75 Proposit

SCHWEIZER AIRCRAFT CORP.

TO AIRPORT ROAD





WORLDWIDE RECEPTION ON 3 SHORTWAVE BANDS! PLUS STANDARD BROADCAST

Without any special certal, you can pull in Radio Mascow, Landon, Paris, Berlin, South Africa — ships at seo, aircraft, police — plus standard broadcast with new power and clarity! By the makers of U. S. Navy receivers. Hear this sensational radio valuel \$59.95

Also hear "The World Master", Compares favorably With shortwave receivers selling for \$300 and upl Only \$129.951

Write for complete details and name of nearest National dealer.





OPPORTUNITIE

DEGREE IN 27 MONTHS

STAMP CD. Dept LL-PS.

Brudy Engineering in this world famed school. Established Depend for nor graduates exceeds taggity. Approved

for Korean Velt Bacholer of Becente Ougree in Machanical Civil, Electrical, Chamica), Auronaut cal Radia (Toleviston) Engineering, Busingly Administration and Accounting, Also. 36 weeks cartificale courses in Surveying and Orafling

Personalized Instruction Accelerated courses Sou-mountials alliminated for ambifious occupat students. Earn year 44reus in the shortest possible time. Preparatory courses.

Extensive Compus. Well equipped new and modernized haddeness up to data labor Low cost New terms start quarterly Enter January, Morak, June, September

Mell Coupes Teday

TRI-STATE COLLEGE

5) 13 College Avenue, Angula, Indiana 9) 12 College Avenue, Appelling and special intermedien. I am particularly interested in Courtest of Carchael.

Mechanical Civil D Electrical Chemical D Accounting Radio (Talavitter) D Business Administration D Accounting

Short Diploms Courses

SERVICE

(NSURANCE POLICY given with each used tire soid. We sustanted the amount of service you pay for, Tube f cen here at b bach thed

SPECIAL Dadue 10% pr for More

YOU CAN'T LOSE!

Super Guality - Rugged Performance - 15 Manths Insu	red Service
600116 \$4 55 670115 \$5 25 700x16 \$5 55 760	414 56 35
650115 4.95 670116 5.35 710115 3.45 820 650116 5.45 700115 5.40 760115 8.95 530	KIB 6 45
650+16 5.45 700+15 5.40 760+15 5.95 550	

700×18 600×20 650×20 700×20 32×6 *) 15 95 19 95 20 4 26 75 19 80 24 75 23 50 200150 370112 65Pal1 1000124 5 85 7 75 12 50 6" 5115 700x15 75 650116 750k16 11 95 12 75 14 50 21 10 7 1 Ga 1 5 50 1000422 61 760115 6 95 3216 n 7 50 750-20 5 75 #25120 2100133 23 50 1200120 1100424

TIRE SALES

et, jedie filte ite bethe each unite. In high the FISH FW OF WHITE U of them. Send t 11 UK at

449 W 37th Stroot, Dapt. 35-12, Chicago 7, (il.

EARN SSSSSS at HOME DURING SPARE TIME, Wonderful new Home-Business opportunity! HELP US FILL HUGE DE-MAND from 20 million hobbyiss. Some Rare beautiful multicolored species sold for \$75 PR AND MORE, it's easy' It's fun! WE SUPPLY EVERYTHING YOU NEED. Write for JEEL plan, reprint, folder and all the details. Please state your age. THOPICAL FISH ORECOERS OF AMERICA, Dept. City Law Angelow 15, Calif.

BUILD YOUR OWN



It's easy and lots of fun to build your own crystal radio set. You need no batteries or tubes when you use a "Melomita" Crystal and detector. Won-derful performance. 'Melomite' crystal and detector with instructions and plans for building your own Crystal radio set—All for only 50c postpast Rush your order today, immediate delivery. ALVA ALLEN RADIO, Bept. P5-511, Clinton, Mo.

200 GALLON

NO TRICK DRIVING OR COASTING INCREASED POWER—100% PRACTICAL

Asserting Performance obtained on claim or index entended on on to 70 M P to The execution to antique and prevail manage carterious principals. For an incition of the control of actions and complete official descriptive work his explanation of the principal of

CARBURETOR RESEARCH-PATENT SURVEY But 140, Asbury Fark New Jersey

CAUGHT WITH A DEAD BATTERY



Amazing 'New Life' bettery rejuvenator stops build-up of plate sulfates . Reeps bettery automatically charged. Use lights, heater, radio as much as you like. Get faster starting! Greater power! RECHARGING IS UN-NECESSARY! Only one treatment needed! Money back guarantee: Rush \$1.00 to:

JSM PRODUCTS DE.

11187 Gestieten Ed., Gloveland 21, 0810

I'll Send You This Handsome SAMPLE CASE-FREE



and Show You How to Make Up to \$15.00 in a Day

WESTE for this PHKK Tellichen throps (her parked with 15th home. 15th high value with and attention the interfers for friends, fellich traducts at hers, for high made to-menous clothest. Porher big cash profits in advance. Recorder wouths on a ultimate or and so ex-

W. Z. GIBSON, INC., 500 South Throop Stree CHICAGO 7, ILLINOIS



Dustite GASKE SEALS METAL CASEMENT WINDOWS

Get year 'round comfort with this flexible sealing lip . . . Keep your home free of Dust, Drofts, Rain and Bugs. Seals and insulates metal contact between frame and window Controls Condensation where storm windows are used. Ideal for airconditioned homes. Easily installed!

SAVES FUEL!

Sea your neighborhood hordware store or write for free sample to



Dier 1 CANTERBURE DELVE . BATTON T. ONIO

INVENTED IN 1948





The Art of SELF MASTER)

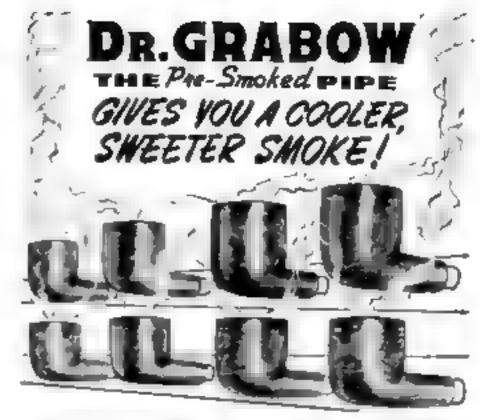
PRACTICAL COURSE-ONLY \$4.95 Complete The ical valuable for everyday use by busy errol hand deferred and hand to mainten for everyday use by busy errol hand deferred by hand the for everyday use by busy errol hand for the first by busy errol hand for the first by for everyday use by busy errol hand for the first by first by for everyday use by busy errol hand for the first by busy errol hand for the first by busy errol hand for the first by the first by the first by busy errol hand for the first by the fir



HE-MAN PHYSIQUE

Thousands now enjoy results from this dynamic new system. Common Sonso shows you the way to a powerful, more attractive body . . In an amazingly short time. Write for FREE livitrated brochure

JOHNSON HEALTH STUDIOS, Dept. L-1 22 E. Van Buren St., Chicago S. Mi.



The first pipefuls determine the pleasure your pipe gives. Yes, the secret to a sweet smoking briar is to break it in properly . . . and Dr. Grabow does this for you.

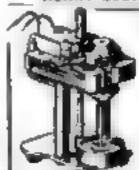
Mechanical pre-amoking with Prince Albert tobacco breaks in each Dr. Grabow as it should be . . . never too hot, never too fast, never too slow . . . but just right for a cool, sweet amoke.

Buy a pre-smoked Dr. Grabow and taste the difference yourself.

\$1.50 and up



HENRY LEONARD & THOMAS . GREENSBORD, N C



MAKE YOUR OWN FOUNTAINS, LAKES, RIVERS, WINDOW DISPLAYS

With New Miniature Water Pump

Here a cent set out or window displays. Amon-tive aposts, or the home as Pursy only 1% bigs. If west Threshold for past or then hell subjec-turing Operation in a of water 150 A.C. to thele-halt which makes a result or work. The history was planting a grange \$972 p.p. tend of tour supersy back

Moore Menufacturing Company, Swadesburn 1, H.J.



Tired of monotonous, low-pay jobs - of working for the other feliose? Tap rich profits in huge NEW field. Have your own. lifetime business - earn REAL money -

say goodbye forever to time clocks bouses Become part of Liemendous expanding industry - yet work right at

LEANE IN A FEW MATE CHRISTON PROVED, TEXTER MICHIGAS

this amazing MIRACLE Solahgives a velvely lumurious surface to radios, larges, toys. niguz, storu displays,

N 1972 1-31

to start saming more money with figurines, auto deshboards-hundreds of Rems. FREE PROFIT PLAN offers everything you need to start at once. Fill out coupon, muli today.

PROFIT

INVESTIGATE TODAY!

CILL COURGE FOR THEE SAMPS

COAST INDUSTRIES Dept. 18 led 1.5. Gamb. he It., Let Ange Gentlemen: Plausa rush me all details FREE

on

STATE

THE ROLL WHITE TWENT THE TO EXAMINE IVERYTHING BADIOS WITHOUT RISKING A CENT. ING DEMAND FOR NEW MIRACLE PINISH. We show you every step, billing huge year round demand...casy to understand instructions tell you how. Earn up to \$5 an hour spare—full time.

A few cents' worth of materials-brings you dollars! EXAIP DUE OPPORTUNITY TOWAY.

It s too good to mass Fill out coupon, half today Get FREE nample, FREE plan, hig IDEA booklet No salesman will call! Do it NOW , . . be first in your exemunity to cash in on this huge new market!

GOAST IMDUSTRIES Dept. 18, 1884 f. Las Angeles Street - Las Angeles 15, Celtfornie



And

LOOK AT THE THINGS YOU DATE WATER

- TABLES
- CHAIRS
- CHESTS
- GARDEN FURMITURE
- Busts-les fur KITCHEN, REDROOM, DATH
- **100 MCASES**
- HOATS PANCEL
- TOYS.
- REMOBELING
- HOME REPAIR

THE TOOL BUY OF A LIFETIME! **GET YOURS NOW!**

Imagine getting a big, rugged, man-size band (saw-complete with built-in motor-for only \$84.95! That's the low, low price of this amea-ing new Burgess Band Saw-and whate power tool it is! Zips through any kind of material

-the thinnest plywood or a heavy 2 x 4like a breeze! Saws straight lines or curves! The most versatile type of saw you can own! Best of all, the compact three-wheel design makes the Burgess Band Saw portable - you can carry it right to the job if you wish! Built and guaranteed by Burgess-makers of fine electric tools for many years, Order yours today. We quarantee you'll be completely satisfied - or your money back! MAIL COUPON NOW!

DEPT. PS-11

GRAYSLAKE, ILLINOIS

Cast Alumlaum Table

Thickness Capacity

Under Blade Ouide, 31/4".

Monsures 10" x 10" —100 Square Inches of Table Surfacel

Positivo Chein Drive - No Fussing With Pulleys, No Slipping Boltst

Longthi

- Houvy-Duty Cord, U.L. Approvad.
- Sturdy Base has Convenient Holes for Mounting on Workbouch, Table, or Stand.

DOUBLE GUARANTEI

Order your Burgess Band saw by mail today, under the John H. Fair Co. guarantee of absolute satisfaction or your money back if the Band Saw is returned within 10 days. In addition, you are protected by the Burgess guarantee on parts and workmanship, packed with every saw. You take no risk!

AALINE DE CHAM CO.	d maket a water		
Grayslake, Illinoi	ia .		
I enclose \$34.	95 Rush my	Burgess	BAND
SAW to me at o			
paid. If not com Band Saw with:			
Home			
Address			
Gry	The same and the same	. 3/619	COR
Send the	RALLEGE REL	a saw	0,0,0,

On arrival I'll pay postman \$34.95 plus shipping charges, Same 10-day money-back

guarantee.

TE POPULAR SCIENCE

Constitled Ade only BCs pay word per important, payable in advance. Minimum ed 10 words. To be included in January levet, capy should be in our office by November 25. He consolistions accepted after November 15.

OPPORTUNITIES

CLASSIFIED

POPULAR SCIENCE MONTHLY-351 FOURTH AVE.-NEW YORK CITY 16

AUTOMOBILES &

Hi M sense Speed equipment from the world's arges appoint Dual manifolds finned heads ejectric doors lower as sets throme panels thousands of cours? I also cars 1853 catalog 35c (i. astrated a craftire free) Whosesales to garages Newbouse Assume? The Jodgaries Los August 22

ANTIQUE C asser-Custom Sparts Cars Buy sell swap A T S lists hand eds twice monthly Sample 134 Automa 19 Trading Service Box 1:88 Airon 9 Ohio

REPAIR fender New simple method Ken. Box 169 Comstock Park Michigan

FREE motor magazines automobile to travere old new and loreign g day photos shop manuals offe ed with non-profit organization. Write today get on free mailing list. Auto Manuels. Inc. Stocabulas Mich.

PHOTOGRAPHS, World a Pinest Automobiles, List, Sample Mc. Box 1928, Minneapolis, Mannesota

P(BERE)) AS automobile bodies Build ;
your oats from O Life town How book ;
- 62 50 Information materials Calmot
10c. Airmated—15c. Gem-O'-Lite. Box
4844A, North Hollywood. California

ANTIQUE Automobile Color Bildes, 2x2 Illustrated Catagog Pres, Universal Bilde Company Box 778F, Severly Hills, Call!

CHOSLEY Car Owner a Club now 5th largest club in America Write For Dets in 3101 Greenway Charlot v N Car

AUTO ST PPLIES & EQUIPMENT

"DISCOUNTS"—Speed, Power Custom.
Accessories' Scuping Instructions County
-25c (Literature Pres), Alexquist Engineering Mutord 52 Pransylvanus (Agents
Wan ed)

NEW and used guaranteed parts for ely-un and Army cuts and trucks Large out stock in America Mail orders Plot ear Auto & Truck Parts Company 186 W 13th Avenue, Denver Colorado

BRUSH Finting Outlits connect to a battery. He tanks or shop required Presperticulars Quametal Oc. Ave. E. Deceased as mola

1900 EDITION It s New It a D Werent' Occ world a largest Auto Accessive de Parts In a og a id days money as pades Over 30 000 stette Inc ad. og Hans and Accessives Ri Speed Equ. ment Rebust It gines all parts and access ries to all ca a and truchs. We have that Hard Today part! Jam packed with bares is Completely islustrated Send 15c are adabted of C Whitney 1919 KB Archer C. was at

SANF to torris Custom Access es headquart en Buy direct e moragna de en grent to push boston door rank committe es Byeed Dens to Equa, pent 40 page cara tog handreds at pastus Se d 15c to Katten Auto Jaibh Bouth Grand Los Angeles 7 for 1

Buy Wholesald SA one y adverted nate supt on thousands a her product at hig discount Free Wholesale Plan American Buyers 620 EE Luiden Bullalo 16, N. Y.

GM71 Discarded injector parts wanted. Hogen, 7120 Carnegia, Disveland, Onlo

T" Ford Parts-1903 to 1976-Richard M. Crocker, Sharon Massachusetts

MODEL T Ford Parts engine and chass. Parts for other make old mode a too Hier al parts made to order (We a so buy so plus items) B S Wishigwaki Inc. M. waskee I Wiscousin.

BATTERY Charger! It's easy to build your own from workshop scrape. Will recharge most car but eries overlight illustrated plans. complete. \$1 Auto-Mas et HC-1. Box 30. Billings. Montana.

(ACHAPELLY S Treatment (Pa ented));
Pute babbit perrings in the motor for
the pistons to sude on At your dealer
3 00 or postpaid Perns Product. \$120-D
Walrigt Dr. Los Angeles 1 Canf. In Canada Master Box 3. Station C. Hamilton
Ontario, Data on request.

MELECTED automotive products ideal Xman Gifts Descriptive Circulars Free M R Company C 18 Bester Station Louisvans & Kentucky

MOTORIST Save Gasoline by Vacumating over the mixtures Pits on cars. For free particulars write Vacumatic, Dept.

READLIGHTS increase Simulation.
Instructions 50c. Telecom. 30 Warner Springfield New Jersey

BARGATH Offert Burplus stock of Oale Rs 2 of 4 nm. Gaw one Et nomy and Motor Cord on gauges desig ed for perma, ent das hierd to until g Brand new or 4 nm feathers. Directions and connections are ided Original price \$7.50 now only \$1.50 p us 400 pos age. Desute all chrome model originally \$117.95 now only \$1.50 p as 400 pos age. Order n. N. E. Sura as Sales Dept. PS-11 \$7 Migh Street. New Days total Mass.

INCRPASE Gascline in leage Three to a Pine move interaction of Contracted Contracted Contracted Contracted Contracted State of Contracted State of Contracted State of Contracted State of Contracted Contracted

WATER Injection " Pres descriptive filustrated in relation Neber Industries. Let crise 6 California.

BUY Wholesale! Join The Discount Corb Lifetime membership \$1.00 Free information Box 622A. Burbank California

E E INOPLATE aut parts note et mirrors Easy rapet sis home price et en Prec bookset Inco Metala Box 1323, PC Houston 18 Texas

RUJCK Wis quart Tire Cleaner fast seconomical Money Back Guaras ee 16 m can 5,00 Kusck Cremicals Manufactur ing Chemista, 1762 Main Street Buffalo 6 N Y

CAR burning out Louing compression? Try C. Wird's Compression Beel 63 Postpaid C. Mord's 1929 Seve th Autora Lil

PENDATELL Improves of ring Smooth of performs see 8 water \$1.00 Ray 8, 6631 Ashbury Ad on Markett

HAVE your amomnium battery finance containing Certain w., revitaine any methodically found and to extend the Brandard pockage \$2.00 post-paid Cel D publishing Chemicals Division California and Maryland

BRAKE Checker He safe Sufery check your brakes becare the pulice do Subple cast and clean to use No experience required to Block Tester Company Box 1715 Brawley Ca. form a

ACROSS Rear Beal Cluthes Carrier #1 00 Postpaid, 1570 Brooks, Firsno Carl

His Rock I On era fitup laport notes with Kare Tapper S encers Qually prid at Easy to mate. Complete set \$1.95 Kare Products 2041C So Layton Sied. Milwallier Wisconsto.

PROPERSIONAL Automotive Onogenmin we areke of Familia Gase Hart 1 area ments brand new or eine en ins. Complession rauges of eine y 2072 or v 07.34 plus 60c pur age. Precis is ergine a area and compensate of eiles 2.36 for more only 64.58 plus 60c postage. Cu and of other bases is not free with first ofder N. B. Sulpis Bales Dept. PSA-II 6. Eigh Sizes. Newbox 1, p. ct. Mart

AUTO TRAILERS

BUILD your own trailer? Plans for all kinds libustrated catalog for, Jim Dandy

B LD Yourse's Irmeer bearprires Pickup Coach Beat R a Catalog 10c Ceranek Lunera Sto S Pare a Kara

MOTORCYCLES BICYCLES AND SUPPLIES

RECOND. (10NED mor arrives and moture Commun. acress sies Comme e stock Indian parts havert returned a Fast service of dan Motorcycle Sales Kalling City 27 Mo.

C21 K motorrycle \$23 Midget motorrycle \$10 Dood ebug motorschoter \$30 Whitzer bike motor \$10 two or inder May tag enough \$4 Pour a pane t res \$3 Majorder unly Send 25c for entangue Number \$6 just out lating the e and ha dreds of other bargs is in new and used midget cars the orscooters home-but ders parts pans etc 135c by first cats ma ! Midget Motors Directory A nep Ohio.

RFSUILT Case one Engines \$17.00 to \$37.00 Cauffie) Motor Industries, Temperance Managed

AVIATION

PROPELLERS, plans, for snow sieighs, authorite, Literature, Game Propeller Box 1264B Pt. Worth, Texas

PROPELLERS Pusher propellers for

PROPELLERS. Plans, Supplies, for show sleights air boats Immediate delivery Catalog 25c. Banks Maxwell. Box 1301G Pt Worth Texas

HOME busit asrpanes Pres details. W am Bert by Dept 15 Box 2056. Perantors For da

GENERATORS, ETC.

EDISON No kej nduriesa storage batis ses le to 500 ampere hour A y voltage
Long guaran ne Litera a n Hawley Smith
Co C state ha and hew York

A PRITTING AL ST PPLIES

ONE Way I see home with call Bell. New and Novel Se d for descriptive cur-

ELECTRIC Pench. E. graves all Metals \$1.50 Beyer Min 105.1-C Springfield Cr cago 43

LAMPS 25c brings bargain catalog ab a.r.g all parts of repairing building Consists instructions for electric ng parce oil lamps etc Oyto Lamps 5402H. C.a. B. Calcago 46

Walth your own motors wire insulation variables of a par a Electric Motor Service 104 Delaware Majon Ci y Iowa.

FREE Surplus Catalog, You need it, we have it. Everything in Hydraulius. Pumps Winches. Welders and supplies. Mechanical books. Prices you can afford LaJay 23. Minneapolis Minneapols.

LAMPSupp iss Who, easier any amounts All parts for repairing and building lamps. Calalogue 15c. Brown Spec attra Co., No. 501—Wellston S a. St. Louis 12.

WELDING, BUILDERING

BUILD By Own we welder and me preser plan: which a good used engine and low out Hobers gran after Weids anywhere and so, are 5k w stand by power for any emergency Write Hobertweld, Bun P 1112 Troy Obio

WFI DENS - e ectric - various models. 874 50 % \$235 00 direct from ma utacturer. F ce literature, Champion Welder Mig., 182PH Centre St. New York LE N. Y.

ACFINE Welding Out the new \$48 80 med \$28 00 Arene ders \$48 50 Engle Welding Dept 42 5685 is undway Chicago 60 III.

A C We ders Four Sixes, Lowest Prices, Pres Literature, Holgerson's Serv , Cantel Kan

WELDERS make ornamental fron radings blustrated manual \$1.00. Joseph O. a nor Milan. Oblo

MACHINERY TOOL

M TICK driven rots y Hins sharpens a Kee Edge took A mont for at ships. Immed are de ve y Moore Industries. Fred a Per sy on la

ALLEN One Ton Pawer Bench Type Punch Press, 5125.00, Offcuser, Allen, Dept. Pall Conton Misseuri

INDEX heads for the jathe drill-press milling machine etc. Very reast with Write for free folder hours Index Heads. 2.1" test B S reet Torn glot Wyoming

POWER tools equipment wholesale prices have busetin Humerrafters Cooperative Grand Rands 6. Michigan

SPECIAL tools for woodworking trachines also metal turning attachment for Shopemith Free folders, Distens, 7301-E N W 19th Avenue Miami 28, Fiorida

NEED Tools? 2000 different navelties, specialties, (domestic, imported), supplies. Professional literature, catalogues free. Allunda Co., POB 268-PE, New York 6

7.48 or 1 Screwdriver by Three standard acrewdrivers various sizes and two Phillips attracted tool steel comes complete with planter pouch Only \$1.39 M J. Stone Company 2176 & minural Derroit 6 Michigan

SCREW gage checks threads per mich and 34 octes ares Pres details Pass Luboratory 112 Degwood Road West Grange, New Jersey

10 ENGINES, MOTORS, ETC.

WINDING Dava hald g 225 motors single and three phase \$1 00 Motor Data. Box 7671 Kanesa City 28 Mo

REVERSING Switch Pres trial. Ires biterature no money with order no COD, maximum motor 's EP After ich days, and 12 86 or return switch Best Tools

MOTORS, repulsion induction, 3 horse 837 Sc. 2, 867 Sc. 3, 187 Sc. A.C. generators, 750 watt 838 Sc. 3000 \$185. 3 cylinder compressors, \$22.50. Butter 1885 hipwaykee, Chicago 4"

REBUILT Gasoline Engines, \$1700 to \$3700. Cauffel Motor Industries, Temperance Michigan

II BOATS, OUTBOARD MOTORS

BUILD marine engines with Pederal Conversion K.ts. Pederal Marine Motors \$6.1 Cottage Grove Ave., Chicago 19, Ill

NEW used rebuilt marine motors, Marine conversions delines. From Catalog Heiden Ma no Bupply Dopt, 33 Coldhu de Mich.

Od I BOARD Motor Parts New Used for all makes. Send stamp for price quotation. Bating parts needed. Outboard Motor Mart Inc., 225D State Street. Boston.

HIT Wouldenin nationally advertised on boards thousands before product a at bir discussion with leasin Plan American theyers 638-42 Linden Boffalo be N. S.

PRINE convers to hints and cots at the sign of most complete time of most series to be not purposed to the purpose that he seems are the series to the series of the serie

MARINE conversions for Pard and Jeep they are to sing 100. Lehman Manufacturing Co 8 - A Broad St. Newark 2 S. J.

FULL size, out-to-shape Boat Patterns Binsprints. 715-38 feet. New 1954 illustrated Build A Boat calange of 50 marsh each set designed Crussers Rudals of Runal and Russe Rudals of Russers Build Boats Sa a Russer Build Boats Sa a Russer Build Boats Boat

DOA S permanen y walter so rd with Y to trassa R i covers '1 sq of \$4.00 GOD Northwest P by C ass Company fat Night Mirgan M responsible block

HKLLY Tanks" 39 95. Free picture Suckman Co. 49A Merced, California

Bost Equipment October Send 5: 00 for a banding costs refunded with first ords Carland Frasher Marina Sales, 546-P-31st Street, Huntington, W. Va.

BOAT K.ts. Assemble—postsett und save information for Comstock Tratters. Boat Dept., Parsons, Kansus

DICHTSE & ATHLETIC EQUIPMENT

12 MUSCLE Courses \$2.00 (Results Outranteed) Sid's System, Paid, South-

HARBELLS. Dumbbells Exercise equipment Courses. Free bookiet. Good Barbell Op. Reading Penns

BARBYLast , totas, m.F., p. Service's Barbell Co., 1310 S. Cary Richmond Va.

HEALTH Strength use hip pocket gym 13.36 postpaid. Lucey, Box 2075-P. Station A Worcester Mass.

WEIGHT Caining secrets revered Rush dime Cambria, Box 26E. Cambria He go a 41 N w 3 h

FIFTH GLASSES, TRIESCOPES

WAR Surplus Bargains, Binoculars Teiescopes, Sextants, Millions of Lenses, I state the right Ere neves Object and etc. Mail 10c for Big "Catalog CN" Send \$1.00 for Stock CN 10 piece Lens Kit and the an august to the real before C based in the particular to the real before C based

PREE Catalog e Thomsands was toraplus optical bargaina, Lensas, Priams, Telescones, Binoculars etc. Sand \$1.00 for 16 fe if the 1st Set and Project booklet the Jacques and West Marrick Road, Lynter, New York

Proc 52 may three coins catalog. 30 disrest mode a Lanted Hancalara 2041 & Western, A-7618, Chicago 20

GIANT Astronomical triescope compared with 6 it tripod 45X laX 100X everyonces flup projector tena \$ 5.00 Me 67 back granates Suffolk Science Service Riverhead 4, N. Y

UIANT 100 power, clear vision, comple c.y assembled telescope Hardwood (vilod 87 85 f.o b. factory 400 power telescope makers hit. Brass focusing tube erector 5 lenses instructions 80 85. Carl Jamer Manorville 5, New York.

BINGCULARS—Telescopes, Microscopes, Terrific values \$3.56 up. Request Pros-Money saving entalog. Criterion. Hartlord Conn. Dept. 815

SPECIALISTS Used new prictor per Prepared sides Supplies Te-escapes Five Hustinied catalog, Naszan Optical, S W Greenwich, Rogerett, New York

REPLECTOR Telescope Rata from 66-25
All parts designed and built at our Hoboken lac over M. for Cells Diagonals Purusing Missi in Tri-Pods Tubust Oculars
Ph. s Grussanteed Beld for Free [lustrated Unitsing Our ph. s Soles Showtooks
hard Products LM West Sind 64 Rm.
204 B New York t

Not B New York to REFELECTING To except to employed assembled 60X 828 & Quarter sed Object to a control of the control of the

Priwi RPUL Astronomical telescopes constructed Private er sea and that in the a fer making eventur day 100% NUX and deax telescope -64.00 Suffesh Science Service Science 4 N Y

B NOCLIARS Lewest prices \$430
83 80 giara leed Trescopes micr acques
2 et ca a og A i d ca aog i Billia at
80.cs. 4827 Second Bivd. Detroit 1 Mich
MOsif ama ing ballota at 1. cs up ce
Write Hasel a. Box 1243 Avenal Calif

TELESCOPE Eits-Accessories, Mirrors abunca red ground to order 2 pe cata a Carth Optical, 136 Garth Rd., Scarciale 3, New York.

AMAZING prices, binoculars, telescopes microscopes, Pres trial Forder "Binocular Scienting" optical catalog free, Pre main importers, Microscy B.dg., West Las Au-

PERIOD TALKLE, ARCHERY.

ARE you interested in hunts of raphing Cabing? Then cap this advertises and the send at once with name address and the for roof samule of America's largest monthly its are where a top of some Abundant Marian or not had and hing Fur-Fuh-Game. 371 East Long Street Columbus 15 Oh

120 PROPUSELY illust and pages an Louis pastols, sworth discrete a r or sec 50. R bert Abers, Posco Lekington Ave.

t and given the two Middle for making a unit on the transfer of the authorised to the et it at the state of t

nt Y Who esale nationally advertised sporting goods, thousands other products at hig discount. Free Wholesale Plan. American Buyers', 627-KE Lindon, Buffaje 16 N Y

OUN and Ammunition prices alsoheds May cathers be www.essie Proc list for a state Delphon. Onto

Fig. E. C. alog. Fire, Lures, Mustad Mooks, Fly Tylog, Lures, Spinner Rod Making Materials, Nylon Coils, Supreme Mrg. Company Amerido, Texas,

WINCHESTER saver rifles. List 25c Rein ded st order. Therapson, Bur 20236 Cl vs. 9

NAME OF THE PARTY OF THE PARTY

mAVE to un finest bows afform exching and He I'v Hunt With Bow & Annow booket. Send 196 for handling Mailbu Archery, 3156-BN 6th Street Las Angeles S. California

MOLDS for Fisherman a Sinkers, Jigs Squide, Casting and Spinning Lures Sweet's Molds, Tonawands 3, New York

ObNS!!! Guns!!! Cuns!!! Mausers. Lisgers. Kentuckies. New-used Hunting Bargains. Antique Arms.—Linstrated Calaing as Ed Agrames a Yunters IA K Y

SURE cure of buck lash, Free details. W. Deagle, Jr., 218-D Jackson Street Twin Falss Idaho.

34P r les alter ne American shells 36 00 talaing Sc. IF Shop West Branch 10. Michigan

Over the see gate modern chio etc List inc r in. Lat House 26 Main. Coopers Mans Mand

IMPONTED, Stiletton, Throwing, Hunting, Pocket Enives, Free Cutalog, J. D. Clinton, 94 Church, Mt., Clemens 3, Mich.

FOREIGN Ammunition—American Ammunition Boar 30 Hay direct Catalage 200 caubers life Write French 1511 (14.0 r. H. Juned 41 Ca., 1814 1511 (14.0 r. H. Juned 41 Ca., 1814

CAMPING ecomment Sleeping bigs for a Low Prices Free 36 page catalogue Mrt Ban Sules 10-11-O 30th Avenue (Long Island City) New York,

17 DOGS, BIRDS, MAMSTERS, MAURITS & PETS

SALE Tame Red Striped Squirrels. Dewey H. Basch, Castletoti, Vermont,

MAKE Buy Money! Balse Chinchilla Rabbits, Cash Markets Supplied, Write Today' Rocking! Ranch Sellersville 16, Pa

RAISE Mark Free book at pen plans in de servein feed tare Mank are money maners. Investigate today haw-rence Maga d Benjaman City 13 Utah YOUNG Parrots—mane tine totaen. Herb M Her 1911-M Lubbook. Toxas

HAMSTERS Delightful small peta Free filustrated details. Anderson's Hamstery 25 Ouelda, Pontiac, Michigan, Dept. 30

RAISE Fishworms—Highly profitable Plantrated bookiet explains raising fording, marketing, shipping, 25c. Ozark worm form V William Springs, Missouri

NATURALIST'S Catago 10c. Chameleon 75c, 35 Jumping Beans \$1.00 Turbe &c. 200 Mealworms \$1.20. Quivira Speciation Topeks 10 Kansas

RAISE Moneyman & On nea Pigs Booklet iron Taylors Booklet liam tole ila PANDA hamstern, the spotted kind Pels and broaders, P Battersby, 420 Noth, Vinciand N J

RAISE Highly-Profitable Angors and New Zealand raphus Particians free Autes Hautity Jackson, Michigan

CHINCHILLAS mases offspring bought R. Ran Route 2, Jeannette 2, Penna

MAMSTERS Cases and he penert write for Information, Oircle 6 Hate stery P. O. Box 183, Claymont, Delaware

PARAKENTS handed breed g stick Butte, \$197 Lyness, Cincinnati 24, Ohio HAMSTERS Onlden and Panda, literature Free, Charles E. Bower, Smokerun Fecha Dec. P.

PRING MAINING

WIFD Rabbins Prous Profitable Into mation the Vol Bladden's Berryto e Arganicas

FARMS OTHER R

PARM Ru ch Opts the les Partrante conditions Wash a on M case a M n tale a Idaho Ores of Section I along the control of the co

CALIPORNIA Reach Lands, 50c to 35 sers minimum bid. Parm ratch hant his return to be ingo a matrix ed and catalant cutains from Tax Land Seres By Land Catalant cutains from Tax Land Seres By Land Catalant cutains from Tax Land Seres By Land Catalant cutains from the Catalant cu

the Furnited Expension Carden Recreth a Furnited Expensions Consecutivity Yunke Pr. duc 6 R. 2 Streeter of Ly.

PLUR DA New development adjoiring Oca a Natural Pozent in Luke Cop y Ben finn a rabing Nice is now be 1 to y a' 0.0 or at Poster free, Wantson Vernor Deland Florida

WIROLTS have Catalog Paring Maries But season 13 Marie Coats to Coats to Coats to Coats to Coats 1224 thareast developed Mix edition W do lakes \$2 reary Service Street Resity 245-ZM 6th Ave., New York 10 S. Y.

CTIME To Houston New and share in her marietress g. a. h. B. a. boots og 20 ma om is America a M. ac e City Today a. W. i.d. Met apaiss Tomorrow. You should prefit from her ama a se with Buy er. a. Mothes the structure of business for any \$143 paratise. B. S. on h. h.y. W. a. e. Today. Na. an. Wood. Her. 413. Houston. Jeans.

PLORIDA Homes on biances sittle and acreage in Potterficial Garden Acres High dry land about 46 miles from Tumps and 21 Pources in close to wonderful P ting and Pancy Tracis as his as sale for three at we are \$ 0.00 for three at \$ 0.00

OZARE forms \$600-425 monthly like histings write Mr Armstrong Shank 42 Mo

PIORIDA Central Taracta Lake Promi subdivision Lots 16 flows \$25.00 mos. h John Rapalite. Box 792A. Tavares Florida

RETIRING? Buy village home like rent

TREES, SHRUBS, MOOTS, HERRS

PRUIT Trees Brack Bross sensetumal new Dwarfs. Also standard are exclusive parented trade marked varieties produce abundant la per bet of a presentation peuts all fruit fas et grewing quicket bracking Auso beauti us ofner et tal trees and struks. Out grant bett Cohirph to Culasing Proc. Brack Bross. Dupt. 2004. Lenguage, Missport.

POULTRY Parmers-Broker Growers-Turkey Remore read the new American Poul ry Journal for Intest libras and greater pradits 12 months 10c Special offer 4 years 2 00 American Poultry Journal, 142 North Wahash Chimen

HAISE pheasants on \$100 week plan. Little capital and space can make rot in-dependent. Proc details, Great Control System Columbus S Kansas

23 PROFITABLE OCCUPATIONS

HOW to Mean Mot by With Bome Workshop used by hundreds of successful craft are enle is what to make How to se'l w rhamp pu out spare rime Write at once for deto a Craftsman Habil Worth 84 NYC.

DETECTIVES Earn Big Money Excel-tent opportunity Detective Particulars free Write Wagmer P-125 W Mth. N T 24

WANT A Diesel Bon Bigher Pay M to ties to increase moome. Eigher Pay M to WANT A Diesel Joh? New Opportuni-We can help you Quality. Mi as method home training Witte today Desci Trace of Meany Lighten it Dates aton. Interstate Training Service, Dept. 22-M. Portland 13, Oregon.

Ht Y. Whatevare threesands buttons a advertised products at big discussi Free Wholesale Plan American Bayers 024-T Linden. Buffalo. New York.

WFI I NO Pays 660 Learn easily at best or pood action; in nountry Non-profit School with New pige trat Inc O I app - ed Wr a 15 durt Trade School Bus F 1112 Troy Ohio

910 and PROFITS Your Own Math rest Business! No Ruk! "Sureres Plan P en Treasury, 700 Webster, New Backelle P 17 New York

PRES 30) Profitable Small Bun-mencel" Amazing shoestring plane! Wo k Misne! Start Sparetime! Deumant Sur-veys, Kenmore 23-8, New York

MAKE your awn weedless fishing spoons to sell Send lot for information. Free-part Buts Company, 1646 Sc. Walnut, Procport, Illinous

POSITION Employment Construction Work. If interested in foreign projects with high pay, write Pureign Service Bureau, (Dept. P. R. Metuchen New Jersey

OROW Mushrooms, Cellar, shed, and entdorff, Spare La, 1980 year row if We pay 23 50 Lb. We paid Babbitt 64 165 in low weeks. Free Sook, Washington Musit-room, 1nd. Dept., 161 2004 Admiral War Beattle, Wash

\$40.00 WARKLY, Make growing mush-rooms. Dominion Patent 331.503 Free amount with Order Morth American, 1887 Younge Toronto Canada

EARTHWORM Breeding to easy 5 red get at to An Earthworth I study His Life Larthmaster Dept. 15 El Monte Co.

Mi Y Wholeshie thousands nationally advertised products have moneyt Make money Pustcare berryr details. Ecmals for pany 56:1-D Washington, Mouston, Texas

PURILIFIE own menasine Many bet erts Sample tout and details like West Printing and Poyd Housen 1 Trass

MUSHROOMS grown hozes, barrels, Mahureless process 50c. Spawn \$1.00 Gor-dens 553 W tham, Winnipeg Manitolia. HOME Barness Opportuntive Pres Detays Unc a Mark B a 183 King N C

PREE Book '505 Odd Success' it Buss messes " Work home! Espect Odd ! Pa gifte-37C. Octatable Capit

CO-Pabish The Pair Monthly \$13 Rogers St., Americanie, N.C. Copy 25c, De-

AIN RENG advertising posteards. Must MAN

W2 W3 Currespondent (\$300-8500) Chistenteed Operate a yahare Lourn ben 63.00 Britis Button PSB Exceptor Spr nen Mo

EVERYBOOY Likes Candy " Learn to make professionally (Our 43rd year) Ragadale Candies East Orange, N J

BUILDING Maintenance Mechanics Pranchise Protection, Luster-Rote, 19273 Edgeffeld, Detroit 36 Michigan

LIFE is short Oct tole muselbing that; up lits and theils you every day like takthe money from letters the result of root and main reer project. Our way a forthmate diseasery or re tri and others about en led be ective Mallorder (Cr) ed Braim Postal Bervick approved -- brings de \$26 to \$45 green at ge flay liquire Nonversiters has \$51 Debugue lung

BOOKS & MAGAZINES 23 BIG Chiangur 1800 bergains send luc Books, 3100 Comp. Farkung Brecking M. SPARKTIME Profits Taking Subscriptions, All Magazines, Wholesale Catalog Free Cases, Assocs Westerd 1 M J

PREE Subscription The Americana agle No Irm No Parchases Required Engle No Ivan Send your name today to rece to news-paper Americana Eagir Contains back Order Division. Americana Corporation Dept. PSIS. 333 M. Michigan Avenue, Chicago I. Ilibola.

USED Porket Novels. S for \$1.00. Stamp brings lot. Trunkat, Gleoshaw 3, Penns.

MIDGET Sible has Last Supper Cruel-Strun pictures ford. Prayer Over 200-P. P. Atags stamp size Clearly legible Black. Unit printed over \$1.00 pustos & Aprila Wanted Quality Sales. But 2274. Ashethe North Caronna

USED Books At Bargain Prices! List vec! Bookshop, \$404 Aylesworth, Chevelend IP OI in

AMERICA's Greatest Laugh Book, 198 Goofy lies, \$1.00 Postpaid Auburn Prod-ucts Company Box 69-8 Auburn, Mass

ATHEIST mote Catalogue tree Truth

NATIONAL Geographic Magazines 1986 37 Any little Periodical Service. But to PS. Wilmington. Delawate 444 PK

BOOKHUNTERS! All Subjects. Send ants' Jaher Book Service. 636-K East 118 Street New York \$2

MACHININI ha dbo-a 54 00 to 00 20 00 00 00 prepaid, Tradebooks, P.O. Bax 1838 New Haven Connecticut

DEPRECIAL PURCHES Braids unusual unus-cet a le sus bindu surp sed A a. it limit be a ce 2 Laurence Cimerescous 20 Mass

CREW-cut mask baldness. It really Works, Details from 1 May wood 1's mote W. Monderson, Ball

HOUKHUNTERS: All subjects Speedy away, New York

SENSATIONAL Book Bargeins' From Catalogue! Write: Old Prof's Book Shop Por r 15 Michiga

POR year to yo Chr atmas subscribe to Boys Reraid America's addest and remailest buys magarine () it es d'and 24 lasties \$1 Sample expy for 105 Walnut Street Ptruthers, Of to

PAPERINGUND beats life brings compiete Cutnings Pergain Pieter And or see Box 361 Jameson, New York

HOW To Live Without Money Write M. S. Binhup 405 Second St. Nevnah, Wie

All An of Human Anatomy Ti accurate vivid Lastration 6 or d \$2.00 Co. Box 1713 Escundado Cu if Datidant

E.H.CA"TOWAL books Buft # B'udy Cota or ree Magnissa Press But PAVILY HISTORY

READ The Burnes Of Your Abrest its. Herd \$1.00 for Bradet a Go de To Fact to H s ary Liets at Books puts hed on the Fire v from 1771 to flate a se where to find horrow or buy them Guiden 5 Buils Brad Blatian Barreter Illa Co H Y.

FREE I us ated Hypnot in Betchep Warre H. canal I P. Ca terris.

16's CRO, 15M & my ellerwer Pres. Write Be in a desired of H a stem Dept I I A 4214 De mar Avenue Bastimore &

MYPHOR 8 and hell Hape at commete course. Free details. Columbia Company 5864-A Hollywood 29. Call

"X-RAY Mind." Dangerous power ever others (Krishnara course.) Inquire. Send dime Krishnar Institute. 1912 Lincoln-Park-West 241-8 Chelago 14

HYPNOTIZE the First Day nesses hypnosic steep or your money in 2 82 00 Leuts 4000 Lake Park Clicago 15

MUND Power and methods of complete Expendis control. \$1 Ivy Box 1765-8. Milwaukee 1. Wierrich

64 PAGE book liggest am Made Page 16c Bookmaster 2281 Kenwood San Jose Cant

AMAZINO record! Hyptiotizes; transfere con rat to you Instructions \$2.05 cod Intermetion free Hypro Records Dept P. S. 1.005 Hermon Brach Casf

ORMOND McChie & great nel' hypnomia non se ready ill thrilling lemona I lys-ire ed \$2.56 Ourantee Sei' Hypnomia Folio' and 26 Hypnomiam Lemona' 75c Liord Co. ind Apparachia Verginia

MECHAN CAL Hope diet men invertien reasons trainers interested of Ton ructions secrets included \$2.00 Cart. G.P.O. But . 1212 Rew York I

NA GAMES & ENTERTAINMENT

BERTS for Autogram New per sme for mechanical muided 500 postpaul Auto-graph Press but as 23 Truss

MAGIC TRICKS, PUZZLES, ETC.

VENTRILOQUISM Amsteur and pro-tessional. Write to Smith, 861 Bigelow, Peorin 5, Ill.

26 PAGE Boyelty-Magie catalog with Movelty 25c. Allen. Dept. PST. Clinton. M securi

MAGICIANS, Gamblers books supplies supposed Free Catalogue Bout Box 674, St. Louis 1, Mo

566 TRICES, Douglas famous 120 page Cutaing on r 16s Fas est service to ma-gressus for 30 years Send the today Doug-las Magicland Dept. 2. Daltas. Texas VFNTRILOGY IAL Dummies low price

-any type custom-made. Send 25c for pictures and information C. R. Gough, 215 M Jefferson Martiard City Ind

REPECIAL Offer Your cheton of \$1.00 cut and res seed supe trick or \$1.00 Spirit Protography for only loc Pres our how 8.00 Mag. Mosely Catalog complete with It tamous magic tricks with first order i nicaco Magic Center 18 W. Randolph Mt. Dept. 15 11. Chicago 2, Illinois. Randulph

SPECIAL Offer \$1.00 burn four hot Joke lieu a S. if it. los Cubs 1 it Cira-reile, Life-like Rubber Monte Stag Chewing Gum. Oursen City Fam Shus. Sta Jee Ganteen City N Y

MAMMOTH Amusement calmon maste. poken Boudet, Britan'ticens Encapes Biera itus 1888. 334 pages v maera aiso Mystery Blad Shoup you Row all proposed sould the do at Manucian Monay Co Cananata. Wagelle &

VENTRILOQUISM Sentaught East 18-

structures that better agent many primare.

Star Offen Texas

2000 THICK Catalogue (\$12-pages)

picket parmy singr World's Pinest

bfag c Caralogue \$2.00 (doner trick incoded freet Kanter's 8-1311 Walnut, Pi t adetphia ?

BE Purny with Comedium's Collection 82 06. Schindler, 1823 East 38 Street, Street, Street, Pr. 19 New York

MAGIC-Parlor Stage. John's Sup-plies, Lower Prices. Quant Catalog 26c (Retunded) Tup Mat Magic, Evanston.

ENTERTAIN With Magie—Hobby Profession, Write-Marsh 4 337 W 1 Commbus I. Ohio

RECVER amoving mer and Profitably astented en ertain Limited and to common sty Be bins Latvit actuarious Mystia Hider Resourch Beach Desauage

200 ELECTRIC stunts, 116 volts, \$1 00. Cutting Sons Los Altos, California

21.3290 Catalogue ' Tricks Por-Losens C sicago 20

MAG C Jokes Purries Modelcrafts Send the today for cate a De, a Tricks and Hobbies 866 Paris Revisted Princes.

AMAZING object. Had only one side A rest puzzler 25c. Heory M.D. #1, Prince-tot. New Jecter

COLS COLLEGATING

WANTFIT 1894 S Dime Pay \$505.46 Certs > 1915 note: \$1,000.08, 1991-8 exacter \$20.00 to \$150.00, Hundreds of others. Know their true value Commerce (use trained onto one Zie Wart troid Corpo-In fire 12: 30:1 Boatout & Man-

GR' Profit and Passare in active is sia come Send for for 50 page illustrated coin catalog You'll be delighted with it Send for it now. B. Max Mehl, 274 Mahl Building, Port Worth, Texas, Largest sure coin establishment in U. S. Zalabitshed 53 years

FREE! Poteign coin hankness and Com Co. re ure .. strated Cata as to approval service applicants. Sand 3c postage. Tak-ham Coin Co. Springfield-36 Mass

\$10 00 POR certain Lincoln pennies. Indianheads \$50.00. New Booklet listing prices paid 30c Lincoln Coins. D-10t. Or don Affrons

COLIS Magazine. 100 pages. Sample 20c. Burn Printer Of D Money Wanted Do you know that Cott Collectors pay up to \$100 00 for cer-rain U S Cunta' And high premiums for all fure todas. We may all kinds Send de for Large Coln Folder, May mean much profit to you Numiumatic Co., Dept. 20, Fort Worth Texas

GOLD \$5 Prece, One Liberty One Indian type. Both \$25. Thompson, Box 20028.

\$1 000 to JAPANESE Invasion Note \$1 00 . 180pp | Hustrated Coin Causingse Bit. Bits to Set Lake Ct y 10 U'ab

Pirry indian bend cen a \$2.00 Savers 1000 Eart Unaks Johnson City Tentiessee

WORLD B Greatest Magazine for roin on esters and acoden nickel 10c. Law-reare Brithers A an unit was

REW 112-Stone Mountain, Arkansas. Texas. Cleveland. Carver: each \$2.50. Whomas Foders No. Type Abam Kit 6, 5 But a Handbook 4, 00 Hera Godenok 4, 10: 56-page Bergalb (a a hear 356. Behee's, 4514 North 36th. On sha 11 Nob aska

CONFEDERATE 1862 \$10. Confederate flag and decal, all for \$1 00. Origans Coin Shop. 517 Baronne. New Orleans 12 La

16 DIFFERENT Poreign Bills-19c Free List Dwight Musser Dunbar West Virginia

TWENTY different Liberty Head Half dollars, \$19 50. U.S. price list 10c. Johnmits 444 K Valerio Santa Barbara S. C.,

QUEEN Elizabeth Cent large price list of coins, Catalogs 19c. Canada Coin. Box 15 Tuest to A Langua

t N(1Rc L (A 1) i) car ad ar Q- reo E rabe in se to t. 11 00 i r 5 '10 K me ar to 500 on y \$1 50. Six different Up Indian Read Cents for 25c. Price data of US and toreign stamps and coins free. No approvate sent. Bryson Stamp Co. \$13 White Toledo. Ohio

1 1 1 Per Seat P-A Scarb 1810 Phila-

THE STRUCTURE COLLECTIVE

200 DIFFERENT including Rocevelt triangle, 5e to approval apparants. 3. Avaion Stamp Co. Springfield Mass.

FREE-Complete set of Pamous Americans, Place, Parks and Fresidentings to approval buyers. Send Se for 15 of the above stamps to a parties are Trible a Stamp Company 143 Nassan Street Dept 211 New York 24 N Y

TOLAR Bear True sie Gie t George Washington. Bit Colored Ecuador, Arctle Irist & True it a la minemoral re Cote to Den it is and others is write if tree with approvais. Capital Stamps Litelle Rock 19 Ark

PRES P we at M g having G and for Se Post Mag. 1 in S. M an 1 va t. Jament wit S alop Co. Dept. 202 Jenter-tono New Y h.

PRES Stamp Collection -- 100 different plants it is Sure to Africa Asia Scar ditiants. Sa sand etc. 30 to ap. 1 hat ap. dcatts. Tutham Stamp Co. Springfield 56 Masserbusetts.

PREE, Valuable mystery gift Aprovata Rayman 17-K Musden Lune, New York City

BCARLE Burnia set 1) 22 value. Hat ve e 2 dientaol Manda ap Fower On 5 ade with appropria the re. Box 1244-V Church 81 Brasion New York City

LOOKING for he or D 8 or approved Write New Way Stamp Labrence Mark 50 (27) 8 Sure In-Please Special Offer Triangula C. actions of 25 at all the entitlety in he after births at many or as an Market Missaul and mark of the entitle Missaul and mark offers Or it south approved Renember Level at all (1) as ages at at a not not as guaranteed by the 11 the best-known name in Physics R at 30c laday to Scott Stamp & C. in Company Dept We 114 and Laberty breet New York

REMSATIONAL Outpanteed Barganas' 1 to Different colors a stractive must red stamps. I & 30 each Rubbel is med a sir Nagara Stamps Nagara-su-the-bake 72 Canada.

45 ALL Different U.S. Stamps Includes 46 FF of the conformation of a role, 2 and 45.66 Stamp Only 10c, Approvals Wijieth Co. Box 511-M. Port Chester, New York.

TREE. Scott's International Adum other premiums Details with approvait Raymax 13-X Maiden Lane. New York City

Only 180's Stampmark, Hartford 1, Conn.

HARE ortagions stamp gard trings a gorgeous diamond note in a touch a dispersion diamond note in a touch a dispersion of the hind puretase for adult begins to territorial as it is not a touch as the settle distribution of the hinds and better flectt to assignment themselves Dept Administration Offer 200 United States

AMAZINO Offer 200 United States stamps includ a manufementalises of a few manufementalises of the first state of the few approval Applicants. Lit strated Bargain Lis a free Maxin Stamp Co. Dept. of Camden. New York.

WORLDWIDE 25 different, about the birth of the comparable approvals. Kent Stamp Company OPO Box 27 to Bruoken. New York

PHER Aradhird Costs Rica Hungary San Marino Monaco Germany Request approvais Inclose to postage filles 55-V Tribora Station. New York 25

The BLAMPS For Only 10ct This man at A 75 Je and dea A 100 Per Pris in a silvent of the Countries through the Samuel of the Countries through the Samuel Countries through the Samuel Countries Countries through the Samuel Countries Countries Samuel Samuel Countries Samuel Sam

OIGANTIC Collection Free-Includes Triangles—Early United States—Animals—C moments was Branch C control High ha at Pictor as etc. C copie e Cutate control Big I to the ed Mana to a restant State Company Dept. Ph. La tatta C and a

FISHERMAN & Treasure set of lively must be ambigue stange such with repient 3 in blillant came relate port be with I reign a printer a Hathagay Box Hand treasure City New York

313 MIXED U. B. only 10c to "Gold Norset" approval applicants: Nothing like them Kesset's Polsom California

SPORTS Triangles—Olympics, Runner Tennis, plus 51 others, 5c. Approvale Arthur 136 Waterloo, Marion Ohio

PAYING High Prices For Approvaint If your collection numbers under 15,000 try out it and 2c approvais. In hooks o. 1 200 Special offer to customers. Clark #142 p Co. Dept. U-1 Muskegen Reights M. h.

SPECIAL!! Nudes collection; approvals —10c. Atlas. 2039-P Euchhowst Hacites Wisconsin

MINT Five Pound British Colony Stamp susranteed sensine, face value \$25, just 25c to introduce our famous approvals Value 1, PP Notthern Book Orea, Neck 20 V

123 DIFFFHYNT Stamps 33c Incuding on a Canada New modified B of Colors Values Red Russia House Heads Indian States Anneau Airmais 5 each Colors Ray see U south Every Stamp different Base bases a with approvals Missey back guerastee Ningara basing Colors Riagan out-the-Lake 62 Carada

200 DIFFF tENT given tree with approvise For age to William Stamps 1635 K 6'th For e Cticage 27

POPE 7 and w 7s different Benefits plus 26 others, 3c with approvals. Thomson, Marionville, Missouri.

EXCHANGE Your Duplicate Stamps. Send 106-206 different foreign and dime. Receive all different. Patterson, 5423 Broadway Lancaster 29 New York.

Utschie, 1141A North Keeler, Chicago 51

HANDSOME afterm pages can be fitted from our a sed variety an event books. Use 2 d of those built spaces at it and he buth Ask to see a built today. He's some at precared. However beams Co. Dept P.C. By up Lake Michaell.

of D b & to a v the Burgain approv-

100 MEXICO—60 varietas. No Revenues

-- 15 cents. Approvat Approxats -- Biocks.
Airs. Commemoratives. R. Lehr Somerton,

Place at Pa

L 8 And Fire an Piret Dar Covers On App on a 1s to about Maden W. Vo.

53 NACIONAL packet sent free to apprical appricants Master Both-

CONGO Weird life a set the Approvaus Herman World 113 Giograph Manches er New Hamps, are

PREE 300 Different World Wide after 61 00 purchase from our approvad Day Stamp Co. But 261 Gaudes h.d.

NIOERIA 64 and I/ George VI. is to approval approvate J M Phaselt 300 bun merville Court, Mobile, Alabama.

GREATEST Free Offer Crossin Extended Covernment Air Set, gorgooms books textural subcred brindinges. A so albums supplied Air to the Asproval Bayers Beel Samo Service De 4 W 5 Be I Camburk a

Mara 205 At D. "e cut Octmans for Zet e ins Semi P state A reset ? Han ha set Big barg. Little a d approvals i r ded Jamestown Brane Jamestown 5.9 N T

DEALERS only. Wholesmelist free. Pictorials. British-Colomial. Packets. Paul Ledermann. 567 First Avenue. New York 18. New York

the thir States 50 different prouding 8 airmails. 15 commemoratives 10c. Approvant Sunsett, Box 47 South Oate, Calif.

OLD scarce C. E. seconds on approval Silently defective, bargain prices. Hearnis d. C. J. S. S. S. S. Sevark & N. J.

UNBEATABLE: 30 complete sets, \$1.00. Approvals. Pinkerton, Noz 63-36, Bethle-hous. Penns.

PREE! 3 New Angola animals. Approval approval to the Ho-Ho-Kus N J 1000 LIFFERENT Worsdards 14 to 1000 M 10 Haywar Hor 151 Ha. is 23 M Y 1010 Fink M ted U S Manage 75c Wr and 20c Measer Hagerstown 2 Md 40 000 DIFFERENT on approval World-Wide Cole 43-G Rinewall, Buffalo 21 M Y Calganille to private tacket containing had deductable to the tacket only 10c to 1

GORGEOUS multisolored set 10 flowers Cong. with grant pricelled like mint stamps blacke 34 Cardinal Lavagerse Brussels 4. Belgium

Purchase A rout Bears sy tolered sets Low o red D 5 M as Phis Lang rd 9 50 Durham Road dan Anae sho

derme Box 42 Seaside Heights, N J

Al BI M 120 P S stamps 3 pres has -- fee Smithon Box \$416 Northeast, Kanses City 23 Missouri

UNITED Bintes 48 different 10c1 46 different 10c1 46 different for a emission 20c No a oproviate Seidenberg Appleton \$44 Wassaum

PREE Sample 1 steel of 1 officel ve Il at a rei National Stamp News, Ander John South Caroli a

OPPORTUNITY! Go grows at with 17; noger to any M doe of Page A come la a d Ra I ad Ptan a A, so the sna B une! Moranita Sarawak Fig Freey-thins unly 10c to approval applicants Evden. Valley Stream 21 New York

per STAMPS only 250. Plus a benutiful on rela. of 25 d Sereol H tier a d Mus or Brade walk bardson motor hass Per to Box 1216 Onkared 5 Chr. c. a

DAMIDAIN Over 1008 d Berent Breisd-TH Domin emocial sea pur stala triaca ca CH v 62 00 P br is in Most 265-D Par Rockaway New York

Plant & Collection Multicolored Conte Bus de Andorra Pree Approvats Prese e Blampa 1865A-52nd Brooklyn

WONDERFUL Offer Beren complete mit er a self for with a private Resen (Note) 118 Lawrence Characo 40

ANMENIA Rimphing From Ukrania Macan Prop with Approvals Choose Stamuco R v 434 Misam J Florida

MAGNIPICENT: Mineteenth Centery O 8. Plus Civil and Spanish War Revenues. In Different 10c To Approval Applicants. AAA Stamp Company Areads Hudding 5t, Louis Magnetic

27 RCTLER Stam a from Sve Mara don't nated countries. His rically values a countries of to an east applicable Guestre in PEM He state New Jersey

MIN, (Unused Cutted States approved as Patrick Assentise Mas Contral indiamaps is 5 is diama

Control Sector State Construe Parket Free with approvalet Saxon

100 DIFFERENT Spain 25c, Fenny approvata included, Reed, Box 906, Chicago 90 Il moiz (BRICMANY Ausers Fra co bes direct

DESCRIPTION AND THE PER CO- BOARD TO THE THE THE PROPERTY OF T

BEND Posteard for select approvals.

le see DESTRABLE stamps on approvate-fe each. Why pay more! Stamps Box

323 STAMPS 16c! Amazing value, Approvals, Star, Box 678A, Alloc. Texas.

COLORS AL Stamp For the Jungle Branch Williams & W. dille Domes is an main Filter different the udite Hamorros Respirant State Tyre Zabu Kanga on Kon abret Ling Kostabi a Bun Horse Ly respectionary according to the Rivers Stamp Company Kingara-on-the-

PENNY Approvals by country. M. H. Roerning 192, Farmington, Ark.

BARGAINS galore low priced approvals. Chur Box 245 Buffelo 12. New York.

beth see with approvals. Beminole Stamps Box 1128-8 Coral Cables 24. Pla.

TRIANGLES Five different -- 3c with approvals. Thrifty Company Silver Spring

FREE San Marino Sport Set, Approvals, Engle, 4916 Roosevelt Boulevard, Phila-

RUSSIA 75 Diff, with approvals 15c. Wilcox a. Box 292, Eremerico, Wash 500 MIXED U.S. 20c. 1000-15c. Echley Stamps, Mendon, Mass.

UNITED States approvals. Select copies med spint. Eingsbury Se. Woodbury 2. Yt.

to DIFFERENT Domark the with ap- | 30 ' MINERALS & PRECIOUS provate. Omspach. 1818 Antoinette. Port Wayne 5. Indiana.

SENSATIONAL U.S. Confederate States catalogue free Stone, 46-5 Bromfield

FREE Bentl's \$7 00 International Album to regular customers foreign approvals. Hal Buck \$15 Waterioo Road Stockton. Cas fut in

GIANT approvais thousands different 1 and 20. Wabis Stamp Exchange 7008.

FREE Sets conorful surprise 10c Approvals, trades—Bristol Stamps, Collins-

200 DIFFERENT Foreign, over 20 Countries 30e free Packet with order Jem Stamps, Port Jefferson, N Y

APPROVAL Applicants 200 Hungarian Stamps 25c -Value 64 00. Ward Stamp Bervice 2504 Oillu Stiest Padutah Kr

500 MIXED C # 75c Brookside Stamps Box 110 Mendon Mass

MOZAMBIQUE latest ten beautifully birolored mint Piches Butterflies given 'Approval Bayers.' William Deems. Ra-venswood. West Virginia

PREE Unique trustrated bargain to a log flating hundreds Mixtures. Packets Accessories. Values galore for any collec-tor! Latest reases. Towerco. 1114 South Ashland, Chicago 8

XMAS Specialt Foreign approvals 10c. Applicants. J. R. Stamp Co., \$15-5 Wal-den. Buffala 11 New York

ALASKAN map on Russian stamps. Set. show og map ships moun sine H storical cultur y with \$1.20 Or y 35c to ap-Proval applicants, Edgar Sowies Box 5454. Washington 18 D. C.

PREE, 250 stamp bluges and 20 d ferent Capada with approvals. Jaydes 2.3 West Dick : sou Orand Rapids 1 Michigan

START your own Stamp Business, Send for Pres circular Donald Shepard Boy 1147 Chicago

106 DIFFERFAT US Commem retires for \$1.00 150 D Berent L'd Commem tatties for \$3.00 300 D Berent Un Commemoratives for \$4.05 Price lists of USA and foreign atamps and coins free No approvant and with above. Bryson Stamp Co. 12 White. Toledo, Ohio

SUPERB Approvate Stampe 's to 's THE RESERVE Hostor Mass

ACCRIATURE Sheet Pree if you request approvals. Lee Hoover Ban 3404. Portland \$8. Oregon.

BAHAWALPUR Silver Jubilee mint set free to applicants of U.S. or British Co-plai approvals. Alan & Taylor Skyland N.C.

WANT be let stamps! Try out que i't United States Poreign approvate No And-

WOW 7812 Different Worldwide Stampe from M stamp companies 64 00 Names 1000 stamp collectors 53 00, M King 32 Alexander Ave. Kamloops, B.C. Canada

200 DIFFERENT Stamps 15c, Approv-nis, Moore, 35-57 130 Street, Richmond Hall 15 New York.

12 PACKETS from 12 different countries 8) 00. Mammoth Packet List Pres. Econopackets. Box 188, Riverside 22, Calli

MONACO Mudus" (6), 10c with ap-prova a Royal Stamp Company, Tamaqua

IDO DIFFERENT with worldwide up-Provals 16c Jameson, 436-B Broadway

ANTIQUES, REFIES &

OLD Ours Priers. Free tatalog Ploneer Press Ha riman Tennesser

WINCHESTER THE Other famous wea one of Old West, List 25c. Hefunded Srst. order Thompson, Box 20218, Chicago

SIOUX Was Bonnet Kit Send \$2.56 for complete hit and illustrated catalog. Grey Owl 1571 Nostrand Brooklyn 26 N. Y

4 PINE Indian Arrowheads \$1.00 Good Tomahawk \$2 00. List free Grooved Lear's, Clenwood, Arkansas

BEAUTIPUL Black Obsidish Arrowhead 31 00. Last. Moise Penning, Klamath 3

QWUITschuerbelleratken ': - Seiling several hundred historical firearms 30 000 Indian Relies. Collectors Cartridges. Coins Ant ques 400 bayoffers shorts Res u Art ques 400 bayores swares her a tio, are Cristan F. 10 tooks Marka 2013 B anderbusses Snaphaa res Res 1277 Fron ters Kentuckies W cherters Ram 70ds Pawde norms B. 10 hores Serrborns Maurical Pheasants Derrheads Dauguerrotypes Abbridges Violen Wood Arrowheads Spearheads Bannerstores Discordals Immahawas Bo-wood Age es M. 100da 100d 100d 100d Minerais Postus Indianheads Gold Dol lars Catalog profuse'y thustrated life. Helke, Wenona 21. Illinois.

STUNES

TEN N Mexico Mineral, \$1.56 six fluor-Prospector Winston 5, New Mexico.

"GENUINE" red Arizona Rubies (Our-nets) Send quarrer for packet Bitner's Box 1075C Scottsdate Affrona

COLLECTORS I'm Do are brings the re bea. of genu ne spec mens ir. m gem and Bra 85 00 bring perfectly out from ca at Bra il topate Airmati bills of check Jean Bagh 413 Prais loars, Nitetal Bra la

GEMOLOGY Books! Catalog 18c At-lantic Books, 2 Lawrence, Charlestown 28 Massachusetts

GEMSTONES Mineral specimens. Every variety Lowest prices. Postcard brings aree bookset Pausmer s 4730 Point Luma Ase San Diego I Ca f

THEY wed 80 000 000 years upo Cre-larrous fostin /Eugyra arietina; 2 for .5c 10 to 71 00 Hawkins Route 4 Chargetown Texas

SAPPHIBE touring me topas net - peridot 5 uncut gem specimens Je Call!

DIAMONDS Rough, Guaranteed genu-House of Diamonds B x \$110-3. Ocsod Central Station, New Y rt 17

AMERICA'S most popular maga inclum minerals Established 1926 Issued every Noche and Mo rea a Dept PS Bot 20 Peekik New York

HOMBIES, COLLECTIONS

INVENTING can be an interesting and profitable hobby Write for complete per ticulars Institute of American Inventors Deat 30 E 631-E 80 N W Meton & D C

RATIROAD embleme 25c sample hat Roemer 136 Jay Ave Lyndhurm N J

patches \$1 Other bargains Mart. 703B Broadway N Y C 1 Beldate

UNUARD Match books 100 different for

FECTING Hibby et oct Au he tie W tary Patch & Institute Commage Hibbson Na r Raise oce 32 and ted 6: 60 Prec pilt. Pritt Dept. 8-11 12 West Joh H Y (

WANTED Clearette tobacco rards. NAZI, Soviet Campaign ribbons, big packet, Lists \$1.00 Mederafts 1021 34th St. SW Calgary 2 Canada

4 HOTEL Baguage lubels 25c Copleston 1555 Odell, New York 43. New York

UNUMED matchbook covers 100 d ffer ent 1: 00 M page Catalog 25c Charles Edelman 1911P East 14 Cleveland 1 O

CLEARANCE Sale! Army Paiches 3c up Catalogue 10c, 33 different emblems \$1 00 Hobbygulid 530 Fifth Ave. New York City

PROTO FINISHING PHOTOCOPIES, ETC.

to MM or Exp Desc p & Jumbo Pro-each \$1 Quaran eed Granty Pier Majer Frank Photo Box MP Parksvide Bto Brooklyn 4 N Y

TWO Prints each good negative. S-eap 35c* 12-exp 50c; 16-exp, 65c; Reprints 6c Marfair Photo Service. Box 617-A Toledo

SENSATIONALLY Magnificent Jumbo Oversize finishing at mutact prices. New improved equipment produces finest work a low praces themp to 1 de use finish only too 12 eap and 16-eap 70c 36 eap Il 58 Overside reprints 3c each Pres Majers Bend us 7 ut pest order jun 8 a be de, hted Century Photo Bervice Box \$200 Chicago 80 1 inous

PHOTOGRAPHY For Pleasure or pr fit Learn at h me Practical basic tra 1 c Long estab thed school Free bis Liet American School of Photography 335 D. tersey Parkway Dept 1766 Chicago 14

BOLL developed and 416 of 3 ,14 aversile press reiox prints & exposures soc 2 exposure soc 16 exposure soc Hagner Photo Service 1318 West Column his Armue Ph ade phis 22 Pa

OVERSIZE Prints no extra charge 4exposure roll 10c 12 exposu v 45c 16 ex-posure 35c Reprints overtire 4c Pinest a x 7 Muli Order Photo Service Box Waterigun Winco sin

TWO Happy People you and we, when you set & us your it may You wi 'be pleased with the beau ifu, results and we was be happy to bease you Jumbo Overside fincontact \$-exp roal superfine fir ish only the 12-map 55c is exp 70c 16-exp 81 50 Overside reprints 5c each flord as your order Free Maners Man bag Flim Service Box .440A Chicago 66. Illinois.

PHOTOS napios-20 Wallet-Size detune prints \$1.00 Original picture returned. Send any size photo or negative (No C O D s Please) Pederal Wattet Size Photo Co., Dept P.R., P O. Bux 1448 Kanasa City 6, Mo.

CHRISIMAS Cards from your favorile near to 18 for \$1 including envelopes 60 cards \$3 Send 15c for postage and pack-L A Les man Studio Bode Icwa

ENLARGEMENTS Fight 5x7 s of five L to Block Arkandas

TOP Quality Past Service 8 Exposure Rol. Jumbo F.Dish Super Pak A.bum Only 15c- 16 contacts 40c Pree Maners Complets Photo Finalting Service Sa Islan-tion Guaranteed Grand Pitos GPO Box 1416 New York 1, New York

FREE Marers cubtact prints to Juntum Sc 25 Ph. to Erman Cards 0, 95 100-54 75 Western Photo Dept P6113 Box 250 San Francisco I Cam

HENSATIONALLY New 16 oversize con-tact priots of 6 plantic bound superpak a bum jumbo prints with year life, pull 25c A bum Stud in Weather and Ok a

AUL X RAPH invocate photographs in raised aliver letters. Complete set \$1 00. Metalua Box 17 Bay Station, Brooksyn.

O MOTION PICTURES SUIDES, SOUND EQUIPMENT

GUARANTEED Fresh 0mm toll maga-De 16 mm roll maga na movie film. Cash blew Pres calvad Kao-M 67th. Holy Kut sas Caty 2 Misson, 4

MOVIE Camera Pum 8 mm rol, \$1 50. 16mm 106' 53 00 Free processing Better P ms 742 New Lots Brook vo N Y

4-16MM Sheat-sound films Complete rental library A., aless subjects Free catalogue taxmole film 10c) Carden Film, 317 West 50th New York 19

PREE Combi catalog of dents & Isman Time for home trusts of thusants Prime of every occasion Lee S and Dept P311
If Wright Ave Mt Ve non New York
WILD Life Prime Encing dramatic section in the natural habitat of animals

of forest and plain. Smot or 14mm in breatain, court of B & W Also 7'17 court and of the for free 1, and higgs atting. Ward Life Frama Sibill, Birobin Avenue, No H yword Card

TAPE Recurders Tapes Accessories, Universal Values Dressner 634 East 20th Harre | New York Caty B

RENT ISMM sound firms 50c rect. Large selection free calabor U C. Film Service 120 Chestnut St. Roselle Park. N J.

ENTIRE Life Story of Christ Smm, 18mm sound and ment purchase or rent. Hemenway Film, J18 Church Street Bostob II Mass

BARGAINS 16mm sound films also for exchange Bedner 5300 Su Taiman Clicago. TITLES and Christmas Caroli on Birring ruler sides Free trustrated but Side force 1440 Broadway New York 18 W Y

LISTINGS Colorsides-Movies. Sample ice. Eddings. 32 Roberts, Corning N. Y. EUROPEAN Color Stides, Highest Quality, Batt and India also Write for Free Catalog 'PS', Argo Slides th William Street New York & New York

GOOD used 15mm sound films. Waverly.

MO7 So. Christians. Chicago 25. EARN up to \$15 00 daily with your movie upector. Details from Melecals 10000 projector Openius Chicago

NEW Movie Bargaian' 50 dmm Prevue 6 m 50c 100 femm altent film (value 50 75) \$1 90 our sittle choice Blackhawk form films hunting fielding restroads. conclude the films 150 \$2.06 Bible studen 300 \$ 98 New used sourd men, burgs he too used 100 16mm reverse mare Panoram musica s \$1.40 Good used 16mm sound projectors all leading makes \$20.85, a me 500.35 Big ca may free Blackhawk Fama 1.27 East h B de Detemport John

\$300 PERFECT used subjects as com-plete 200 form \$7.45 350 16mm sheet -\$1.75 second \$8.00 Postpaid Course Free jets Drut S. Abbe Frams \$03.5th Ave New York 17

5.000 NEW-Used 4-18mm. Stient-Sound Films, International, 2120 Strauss, Brook-on 12 New York

4 CAMERAS, PHOTO SUPPLIES

NEW Argus C-3 outfit \$51 76 Behick 20" shaver \$18 80. Parker pens 35's off other terrific savings. Pree catalog era Shuppe, Box 801-811, Mount Vernon, New York

WHOLESALE Photographic Supplies.
Cameras Pi.ma, Projectors Entargers.
Write for Free Catalog. Capitos Photo
Supplies. 2476 Ousdasupe, Austin. Texas.

PROTOCHAPHY For Pleasure or profit | Lourn at here Practical halfe training Lang established school F 99 half of American 2 most of Photography 875 Disversey Parkway Dept 1730 Chicago 14 21;

St V wh sease nations y adversed demeras pixels supp es Dictionands other products at his discount Pres Wholesale Plan American Buyers 429-TT Linden, Bullate 16 N Y

BANG Says. Trading temperas a national habit ance 1910. We se to Bam the old Horse Trader: A postcard will do Simply say. Base I have and I want flow much will you mine the? Satisfuglion guaranteed. Base Carrers C in pact Dept. AG. 175 W. Maduon St., Chicago 2

BRAND IT America's Most Versathe View Press Camera Interchangeable reducing backs are able Brand Camera Company 907 South Victory Bestevard. Burbank, California

MUNIC, INSTRUMENTS &

WANTED Promi for manical nettings by a six greaters herebee Cit ton M. J. Schelbes Wanted to be set to most free frame ration. Send points McNe? Master of Master St. Car. of Sq.

PORMS Wanted for master serving Bend Assens Free Examples (no. Pire Star Music Masters, Set Beauth Bidg., Buston Musiachusette

POSICS Wanted for muters setting for a posme Free countrain a Crown Music Company 1672 Broadway New York City 16

Manches Per Protect pour poems and some Date 1 mail says ere Wright In said procedure! Song Service, 332 W 56th Dept. P.S. Hew York 19 M Y

BONGWRITERS? Lot me help you blacke for bookiet, Marie Refers 166-C West 70 Street New York 34 N Y

NEW dong nettern gurt 1623 there for an for each fire Pres Parts. He obligation bredomisth Music School 200 distance Head Losoredo opening Colorado

SHOP the 2840 Breadway New York 18 N Y VIOLINISTS — how to play better Pracer 286 Empire, Brooklyn 25, N V

MUNIC Bervice, 243 West 12md St., PS, New York 33.

RWISS Musics M ventents Sices ent Quality \$2.50 Spiriman 155 West 62ad Non York 56

VOICE Secretal Information! Free!

POLMS Wanted for muneal setting Bond norm for immed a v reside a con and Press Rhyming list onary Richard Brothers of Words Bond of Chicag 1

POPULAR Bongs How to write and wal them. Write for free booklet Execusival Songwriting Onteway Songs. Box 2478, 1 Hollroad 26 Ca ornis

BONG WRITERS Musicians After fore and time money The shortest most conates simplest most inexpensive teaching of Music Copying offered. Pen and paper included. Only \$7.40 postpaid of C O I) plus postage. Satisfaction Guaranteed Carton a 444-A M Sangamen St Chicago 22 M and

1933 ACCURDIONS --- Wholessie, Pres enter a American Accordion Center P. # 11 8428 Belmont, Chicago,

HIT P taught courses Plano singing sergustring and other trate-ments to us to see on a Music Teachers Associated MF Potters Lune, Great Rock, New York.

GUITAR. Play immediately. Rastest | merbid Lemora include Recordings and book \$2.00 complete Makes wooderful U . Book imporate \$1.06 Chord Mages. O Star Whee. Mc C Oods Company \$15 } r . n Ase. New York.

Respectively that we make from your lead sheet." Details Pres. Masterpiese Recording, 1 S. 56 St. W. Y 22. H. Y.

RADIO, TELFVISION, SUPPLIES & EQUIPMENT

MAKE symple tubeless better out if a tence getting crystal radius (crystal and it strated instructions like postpoid Ailen, 427-8. Clinton, Mo.

LIMITED Quantity surplus double head phones High quality 5 ightly used \$7.65 Value. Special new \$2.95 pottpaid, Guaranteed, Allen, Dept. PSE, Clinton, Mo.

RECLAIM large percentage Television Picture Tubes, Kenipment and instructions \$6.50. Television, 102 Bridge \$t., Grand Rapids, Michigan.

FREE Radio Tester. Tools Soldering from Build and keep 15 guaranteed high our ity Radios and Test Kingareri of 17 \$12 to compact. No experience from 64 Mines hack guarantee Order di ect of 180 d for description iterature Free variable Radio and TV Repair Ouide on request. Progressive Electronics 465 Union ave. Dept. F8-11. Brooklyn 11 M. T

CNASTAL Radio Kit \$1 10 guaranteed to work, phone \$1 75. Clearco Crystal Co., 1229 25th, Des Moines 11 Iowa.

CRYSTAL Radio experimenters, Write Lesite Bules, R. C. Lakewood, New Jersey.

MAKE air pie tubelem battett en fortance or tang crystal radius Crystal and thustrated instructions 2he postgrad. Alien 622 ft Chittan Ma

CLEARCO Cristo, Rotto hit \$1.50 preamendided \$1.3 free rates gue Guerros Cristos Co. But 1851 Mi wante 1. With

PRAR Me Page 1801 Television Redio-Electronic estated World's argest of rise anneal prices C implete supplies of by dten appropriates amageurs services at latest I's H Fr radios phones record for P A equipment Thomaside of partitubes test instruments books diagrams. Top quality money-saving varies, Oct yours note! Allied Radio Corp. 180 M Western Ave. Dopt. 21-L-3, Chicago 80. III.

INEXPENSIVE Rift Ands Predicate Amous of Companies to opening before A Bend the 16th Linus and Avenue. Ridge-wood here Jersey

GLARANTEED INTERIOR when provide process through about 17 the author 12 to 12 to 14 to 14 to 15 to 18 to 18

END repair bills, Ping-in Sav-Set tripins table radio him \$1.00 Mill Comun. See h Pasadene Cattlerine

The Rel' Creeks allower bearent thing to a real Walkie Taigle Tork and receive Radio programs it a rorteine 50g In the Creek phone Yaller Board Bun II Guth The Pitahung New Joseph

TRANSISTING Latest Crystal Divides Minust by Electropic Computerts Will of some Annual Amounts bein Ricci funds. M. W. 68 New York Cap 26

head ample powerful distance getting crisis. rad. Works anywhere Houserstond handset 7 rees certs Muney back guarantee Francia But 5055 Cievaland Onio

PRPSRIMTHIFF B para diagrams booklets. Prov cutolog Detaclas \$200-2 Quarrent Lan Augusto 43

LITTLE wander crystal radio-little but food Prepaid M in Bull Catter Wash

AMAZING photoelectric cell transforms tight to electrica, the gr buyen to good Only \$1.06 Springfield Peterp to But \$4-N Springfield Gardens New York

Frices a. d. descrip mais obe Television, Tot D. dec St. Crand Rapids Mr. S. gart

74 PAC L Para 16 Crastal Ret. cpWr Preset 1886 to in 23e or add a Radii b 60r Ca and Labout cres 136-T Fu ci Redn to Chit Ca (crasta

TUBER marginally advertised brands wholesale prices if settinger I also Mart \$700 116th Street Horses, d. H. .. H. Y.

COLOR television Enjoy matter or 41 ter screen now Easity attached Fond 62 for your screen size. Settatection guaranteed, Zingo Products, Johnstown S. N. T.

37 BUSINESS OFFORTI NITIES

EXIRA Miner No Se ing operate ser on a Albo g at the devaluation bit ser K & hu to 221 623 Universet. Chicago 16

GOOD Paying Business Si verting mirrure pulsing autoparts reflectors heep enbethroom fintures etc. by inte methods No transpour shop required outfit for dished Free Businet, Guadagiai Co. Are E. Decater, Illinois.

Of ERAIE procession mail order business Write Walter Service, 4158-B East 312th. Cleveland 5. Ohio

VENDING Machines—No selling Operate a route of soin machines and sorn amazing profits, 32-page Catalog Free! Parkway Machine Corporation, Dept. 79. 215 Ensor St., Baltimore 2, Maryland.

imPORT-Export Opportunity, profitable world-wide mail-order francises rom home a thout capital, or travel abroad Established Wield Trader ships contractions for no risk examina up. Experience minuscensory. Proc details. Mailinger with Luc Angeles 24.

WEART Venetica Billed Laundry Proflinks lifetime business. New Machine Prof Sucket P.D. Co., 612 M. Senece Wichele, 12 Rabons. NEWEST Spare Pull-Time Business to \$46 hour possible Paint with Suede—the 5 sh with touch And systeppeal Brants y auto dast hourst ment ration to a figure paint and the factor to a figure for the factor f

ENVELOPES addressed acturately reasonable Past Service We have capable addirected in your city Oreman System, 3 3 C Dicitel Coverand 3 Only

137 PLANS for starting home business. Details. Elite Co. 230-A Grand St. N Y 13

MARE money addressing envelopes. Our instructions reveal how. Gless Glessway. 5712 Euclid, Cleveland 3, Ohle.

MAKE Money spars of full time sasting Mutal Toys and Novelties. Bug whospale and that the start for Autos Sadders Askiraja Banks etc herps manuscrupers busy Product on mouths form about for up to 100 and more castings per hour so experience or special place hecetancy Write for information and policies and patterns needed Metal Cast Products Co. Dept. E. 1606 Baston Rand.

PART OF ALL PLAN BULL SO SATE Reportment of South Allen Warren M. Dr. y House, Bux 4834 Lass Augustes M. Compartment

PARN Money De dog Benormars Rives, Cameras Beid for tree dever halteten hid og de Cu. 16-E Washilgton Place, hen York J. N. Y.

RECAST old batteries into new, Latest art incomests Southern Laboratories, Min-

Laving in nigure (Ming) trees only to be 30 section and Grow at Mome Big Profits Spare tone opportunt y Fuering about ng! Write for Piec Seed and P an Names at Namesy, Days, CO. Ingenued 4 Catantala.

PREED Bary Truples! Pish at home. Eart, Sig Mining? Learn Services Many his Luge demand Adm in Opportunity Pres. Press Press Truplests. 1886-Q Last Angeles St. Les Angeles 18

MAKE Products - set Managerer-Pormula Catalogue Pres - Insec ' 8347 Parnell PS-11. Chicago 21, Illinois

see bronse, gold silver Follo Pres, M.t.tart 171, Fill South Broadway, Las An-

PFARL Pinals of New address home. In time bus out Free birross pion. Fee ic. Bus Juli Los Angeles)

MAKE Periume Care que Proo- 'Interna ional' 6347 Parmaii Pil-11, Chinaga 21 / 08

PIE typewriters Pros bookiet describes our modern insurentive home at dy source Pectery methods taught, Write Typewriter Building & Tarm tum Ponna

BHONZED Buby thos Metallicing equipment, New and used Big selection of metal and only mountings, Free catalogue, Hollywood Bronze Supply Dept, PA. 1626 E First Street, Los Angeles 42 Calif

at nome Lycke Ban 2011-B. Cleveland

MARL Rubber Stamps repair doils bear straight toward g M d g Laign Cauthorne of 40 lifens Universal Bon to a P. Penris Districts

blant A Bering Service buy who lenate thousands nationally advertised products, Make big profits selling at exemble discrets a Perfectal brings deta a Ame to can Sureca 627-T Landon Suffato it Y

HAISE Orchids—at home—ble profits—face to the Year from diery cities the Greenhouse Instructions, Including Boucheting to Orchid Plant bent for no risk each tat on Proc detail Plumbrased, 44.2 II W stare Los Augusts 3

TOU can make a furt he if you take on first with the propositional new \$4.00 you siectived burg at alarm. Tremendous sains. Federal Products. Evens on \$-1 inch.

MAKE Money At Home as renewal headquarters for all magazines. Big Christmas sales profits now, Liberal Commissions. Supplies furnished. Write for Free Catalog. McGregor Magazine Agency. Dept. 5168 Mount Morris Hilnels.

MINK Resting information free Consplete, Lake Superior Mink Form, Superior E.S. Wiscontin

PREE! "301 Profitable Small Sustnesses!" Ama ing shurstring plans! Work flower Start Spatisting Doumant Surture. Ecomoro 23-6 New York.

MAIL Order Business Right from your ters. You can have successing but total in your spare came Start with on 9 h. 60 to-tes men. Act Now Berd 51 lot 1 ruc-tion to Bayer proper Dept. D 5440 Meret y Bred Lue Argeice 22 Camber ja (No risk if hot sat stied, return within 18 days \$1 00 refunded.)

IMPORKELPERS. sperrase carnings op-erating sensational bookkeeping service. Sern 6643-B Vincians, No. Hollywood. Calif.

MAKE Muney selling by mail; instruc-tive hooklet 25c, Manhatian House, P. O. Box 51-L, Saint Albans 13, M Y

QUICK Money "Repairing Car Batter-tes." At Home Easy Tou! Batteryman Grand Julic out Colstado

OF REALE profitable spare-time Home Let et Hoop by Stall Write Couring of P horses 1923 So. Slot, Milwaukse 14.

POPCORN and Potate Chip squipment. e at 10 Ohija

the y ler a Boyard, Missouri,

BEXIKKETPERM-RAID BOOK MADES Chierate an assir Ry Ledger System water or two tune Prop busetin Write Prop Busetin Corners

EARN Morey He trig Jenerry & Home And insides Beind for Price Whistmale Ch a have A dury & Ch 14-L Washington (a g New York 3 N Y

HOW to Have Needed Punda Free de tank Emerpeses Burnes, Agraeuce 3-8 New York

BIG Money—Amazing new home heat-man Pearl A sab bady street her plan Pearl Art. 72.6 Bear, Bell 2 Camorina

NOW and where to obtain Capital? Free details. Star Service, Wapakonets. Ohis

(HRILLING Profitable Home Dusiness. Make Las seizer clies sie is okey trees d in Buwein Ter Sc h belay demand is ormation less Valva Bodienita 21 M Y

INDUSTRIALISTS - Businessmen. In-... " nnumerable opportunities for busiters and large and sens industries as 6 a sacking and specific requirements Y a l to profit truck with continue time with a Lincoln v. mutidentus feber treated contacte tree complete information will be sent drateta retein, ment Derteine fanid Cald-

ONE Don't pure you in busines in mediately No risk No Inventory Personal Service, Box 26, LIC 1, New York

EARN Extra Money weekly mulling erre are for edge tiers. Complete in-strag part 23c Same un. 4217-8 Oleane Screet Limb set 11 New York

READ Progressive Maistrade Money-making Opportunities \$25. J. Jerine Snyders Lake. Troy N.Y.

NOW Earn holder cash East money with pressure in spare time W J who resale distributor offers full dealerentp discount on nationally advertised standard brands of appliances, cameras, radios, becycles, jawelry watches, housewares, atc We supply for the first de and res on the track of the disease of the wholesale price list pur to a line traced catalog showing hurd, eds of thems. County to the traced to the catalog showing hurd, eds of thems. pass up this merative appareums. Be i able Distributors. Dept. PS Non 272

VALUNAL Models Lates, Fatra Thick Pres Sample Pick Trise, Supplies W. W. and 1.5 B Daraid Postia In ness.

PARRIED BOR week y in space thme I fer me thumin business Details free Emin Bee Det. PH No. 902 New York & N. Y.

OWN a garden gill business Experience

AMBITICHTS Desire Richest Read Success Today a 6 Success Pain a Success tips 1.000 000 people will read \$1.00 Postpaid, Merrell Quinz, Post Office Hoy 261 | or Book Attannes

LIQUID Rubber, make flexate moids Free flample, Chancy, 1136 E. 16th St. Jacksonville 6, Pla.

MAKE Perfumes And Councies At Hore write Carey Laboratories 1296 Countries PE 12 St Louis 2 Missouri

OFF & New Start In Life to Consection By 1984s Free Details. Franklin Credit Rosness T Stret in

BUY 250 000 articles wholesale. Directory Mr. Publishers, Box 1666-All. Decreit 31.

SPARS Time business. He investment Details free, Howell, 1230 St. Andrew, New Orieans 13. La.

GROCERIES Without Cost! Quaranteed! Free information! Jaydet, Boll 664, Woodland 4. Cantornia.

not not writely practice Out india-pu absention or mediately from the in-mains in stamp Harrison see Empire Benium Harbor Mich

EARN amazing profits by following our instructions, selling nationally advertised ceive multi-colored miesman s estalog and confidential price list. Result Sales D. 500 Puth Ava. New York.

OWN Operate Rob n- Withing We to "
Place these hew \$6.50 this Games on
countries as Ca on Coule Laborher action
etc. collect car a week y Details Free!
Libraries we Bur \$20 Long Seattle Ca if

MAKE Bes tw muda! Coal plaques bookends, figurines! Proc sample! M Tooker 630-A Chestont, Hamilton, Ohio

OPERATE "Escalator" Maniorder syslem, selling our products or any products Pastest, most revolutionary mailorder aystem known. Write Belbyco Decutat 174 Illi

MANUPACTURE durante plantic, easily ic pound. Builds resilient floors, tough. they a sig play or and abucco. Built to Cracmary are there and tracing A acr-light waterlight, flameproof per proof Muld good home \$150.00 room. Bays Labets or Grissiana Cip B

POOD ma seiter business. Home apersted. Everything a sed forces proven pass Free details, Frank Foods Desert ft, age of Co. 7 is

mailing our posteards. Over \$50 week. Louis Ave bent to Mass.

INCOME from local information, Ru-Be re Wite Biners : La Verite B Calif. Money Post a d bis so details Review Company, 5037-E Washington, Rousing

\$250 WEEK reje ted Pres benit Odd Bucces a hissimesses," Work home Filanci son d Odd PacificadC One dide commission

TARN 52 06 Hour! I do-making San-dals. Youngs, 1366 PG South Pirst. Arcadin, Callibraia,

MAKE Money Cathon cards Comittee Pirasant Profitable Paled, Box 55-A New York 23 N. Y

COLOROLAZED Concrete pottery made without molds, Fatented method Ceme-tery products, novelties tiles Basement teak-sealing Mongy-making projects Booklet, details 'ree Men only National Pot-teries Grand Rapids "Minnesota"

PRFE details. Home corrected a salerder E ers bing supplied Lynn 10438-C No tone Los Angeles 34. California

DOLLAR TABLE Copyrit (1) Packet 10c, Hillion Specialty Daras and N J EARN Money With Typestiter-Sewing Machine Details Free Edwards, 2015-Pff WHAT S 1 . P. etc. O: It to be What

ever it is opening oil management will be p vis to greater excesse link over cuttent copies of those evering and feel through our Bast to Cet Arman ted struck Choose rim 6 287 pub at he butering a fields buildent house out agreed a fields builtest blant end agrand ural spirits to being ein Write fer ein ren 1 to 1 a free Commercial Engraving Publishing Company 348 North Ritter Indianapolis 19 Indiana

20e BRINGS Warehouse bargain catalog Cord's, Edgewood Drive, Ningara Falls, N Y

ADVERTISTNO brok tratefree Cash to military demand on Union Tabel matches hate for an base series and me titles, par printed projection subranteed on repeat refers Carl rames a con Rappinist M chico Dept PX 125 SHitteren want Chicago

WANCED! Home Producers by manu-Incruzera in our Clearing House Berster Become a summitte tot exclude partir products for three computers. Thearands of taxy be-make stome fromited Cast to et hame without previous experience Plastic Service Associates, Dept. PB-11 East Section 38 Mans

RABLE \$15 000 \$30 000 annually Pranchire pretented Guaranteed minimum 612 100 or money hack L re at home No merchandlase to buy Sell employed. One of most unclusive and note on other beautiful to be the distant of the Money resunded when book to used Harrets & Company But & 2 Louiseaste Tillings.

\$15.00 THOURAND Possible - highest prices comp via maring cate and add en-ing rum them lade to id typewrite Par-late are free A min lot by Robies Main START a set erabon on a shoughting? Sures 836 600 Blanced \$16.00 Information?

We in Bus 13 Bunting Ridge New Jerney OPERATE Problems Garden Princes Plane Sent Y w Yushp Products. R. 3 & Streeter (8 | 1 azons.

CHRISIMAS Costs Addressing professeds at home firsting instructions complete with mailing his and directory \$2.00 prespaid (Treatnam Dept. D-88, 6731 Muss are Pilitade phis 19 Pa.

COPIES Of Leading Multisider Magaz of Literature Describ up Many Money Man-ing Plans, Send 23s. Gilco, Dept. M 30 Magnolis, Norwalk, Omn.

ELECTROPLATING. Profitable Home But was Autoparia, hovelties, glitwares, mit was Easy a expensive home processes. Free hardet. Typo Metals, Box 1931-CN. Hauston at Texas.

CASM-in during coming Income Tak Season. Establish profitable, dignified, Tax From Prospectus, Union Institute, Lake-wood 1-E. H.J.

UP To 9 8 0000 Yearly Waw Exclusive Mail Other Printers Put - pation limited Rush Se a supp los further field in Pac for Advertisers. Box 4007 W find Dies & Chie fo a

PHEFARE Now for security! Learn how you can operate a profitable little business of your own in spare time at home. Benefit from buying whelesale. Write now for free folder 3. The Gutery, But 13, Cincinnat 13. Ohio

SUNNY California Land Bargains as low as 65 00 rer acre. Low Down payments—sow monthly payments. Write for free in-commission. Land Department, Suite 186. 1540 M. Highland Ave. Hollywood 78 Calif.

MA L Patente Al Rome Get Lete Of Orders Rees ad Mutar Orders 2 ed Price Schapper alla-P Waltim Rectioner 21 N Y

TRUE L structuous- Metal il og flabe Merchange Posters and

AMIRE & advertising histories M at March.

EARN money at house making thine-stone levelry. Proc catalog Chert, Box Bill East Orange. New Jersey.

START & Telephone Answering Service in your home, profitable life time bust ness. Peateurd brings details, Telephone Answering Bervice Consulting Co., Bux 29 Learnigton Mass

PREE: Unequalled, hig profit, home mellorder details, Mallerd, F613. Southamptob New York

56 MAIL Order Plans full or Spare time catalog free your name address took me Service, Box 2504. St. Ann Scatlett, Minsempatio. Minnesota

TRARE Sew of Much o Repair clouds y or I H w to make big more was to me a segang marries of a will character from Tarior Service Hamilton Of an

START your own profitable home mail-Write today Studie Products, But 364 D (o coday & Cantoria

DO easy add easing maring with from rout home. Get cash orders, keep every evil Write Paragon, Bux PS-2184, Houston 1 Treas.

343 197 & centional p PERMIT ideas for home operated mail business. Rush name, Miller 1772-E Carlyon Road Rast Cleveland 12. Ohio.

SELP He p Books Courses Managin to les Ra ph L derbal Meabs A. L.

STARL bereinere Reneunt be vire Pracedure Excessive Musicker 506-PRILISO Auto a la no a

EARY money? Amorting plants! Easily many of at home the and tree Bruss. 216 E West Jackson Boyd Chicago 6 1.1 life appointed Rotary Public Details free Manages Press. Box 1272-6, Burbank, Cast'

BULLD luggings and bases at bome or I your product He apecial twin or equipment breded Free de'aux Casscratt, 653 W.C. Sunset Bord. Los Auge es 13

BUY it wire abate. Munt acturges Die tributers Over 650 800 (ers Liverature li Minierra

IMPORTING is profitable Details fras!

82.000 A Month-Eury plan complete the for handling by dherg a 1832 Easts Court Willow Bun Michigan

BIART Uncrawded profitable Point Batting Supplies Business. Stall self-lag from home to thus these civic societies Pull Se up Service Pice information. Harnald 80 Bennett New York 21

BE Notary Public. Rate higher Details Free. Stationers, Helptes. Texas

NOW Available. Inexpensive course in mail se ling Rush name for free descriptive literature. Kilert, North Edmonton Alberto Canada

1930 DEPRESSION forced me to invest my can be read on many cat high potential home maniorder Lucky design paid immediately \$1 000 to \$3 000 every month since! Over half net! This original design practically foulproof is now mapped out to guide mallorder heginners. Literature (ce Glover Union City Penn.

EVER hear record like thus? Our hame manorder musts only 2000 circulars in subject taken in 61000 monthly m rathin Don's this since 1850 a Nesalt of a streamblined me no system that cours loss to operate and returns more come than any comparative business 2 000 c truck a \$1 000 Dear to the Hearthstood.

WR Lave our mallman-He leaves ever \$1 000 00 monthly in our rural mailbox. My college professor hosband drafted a screnlifte home my leider method. We be abl n Texas ranch live as we asways wanted. Now we sell the 'Runch Mailorder Method Coerates anywhere Linears Eve-ningst ade Ranch Research Linears

DESIGN for Living space us country entate favorite outdoor act is me free dom to work or load a scome do to the our examp. We have this Wish every sin ross of Assure me non-nonspet of use of our less rate y designed self operating mathematics as seem and like out the compare pro-cedure. It charge small fee. Justism Manife Wanthrop Mass

25TH Ann versure next year of ore of ant an antique a nadder home may refer becomes a seek or of mention may be the second in th 664 Duane. Astoria Ovesion

MAKE Money at home making liverature Pering fact or on he as and more character Everyth ne serviced at wiccot it is leave Thomas Jeston, Kermana-R sh Lame T

PARK Electropic ing Information, Money Making Plans Polymora I coulded Bond polymoral for your copy Highly Paul In-terpaining Pricrowded Peld Plaier D Hyde 827 West 12016 Bisset Los Angeles

546 PROM Square Post Plywood MAN DACESSATY Write. Woodart. Bridgemater Mana

PREE Vending Muchines if used to sell our profiate touch (a hieratal

PRFF samples Disgrams Instructions Comp. stelly new sucres had print table but eas Bend 25c can fit handling in the 263 K Lexing on M. Paul 5 Minn.

MI Y Whitevery Make pare district entportes de a s Y u ge & Rent Ohio

MONETH SKING

SELL Titema gems, 10 75 carat whole-mie More brilliant than Diamonds. Free Catagger Demonits, 1664-6 Matchess. Oak a d L (a

SPANETIME Profits Taking Subscrip-tions Al Masan to Wit reals Calabor Fire Carte Age of Westerd I N I

START A Buying Service, buy wholetale the stands in the year prised or of their Make but profile set a get at accepted discuss a Postent brings details. Amy them Buyers, 630-T Linden, Buffalo, F. Y.

SCHOOL Seniors Sell Classifica Ameriten a most beautiful Grad a new Name Cards Largest seaschist Hartest tom Endetoft Outstale all others 2 or samule kill Printers t Dopt P 4600 Mapa M Scranton & Penna

DETECTIVES Earn Big Money. Experience nunecessary Detective Particulars free, Wagoner F-126 West 30th. N Y 20.

WIN contest money General Contest Bulletin gives hundreds of Los Letts current contrate and rules. Sample 35c Gen-eral Commets 1808-A Sant Sch Duluth Minnesota

PLEASURE and Profit Preserve live Sowers to last for years. Details from Trial size \$1.00 Refundable Hermansen, \$10 Pitth Avenue, New York 10, E. T. Butte 1102.

MATLONDER—Operate profitably home bust can us of Free Adversaring Merical Practice in G. Se. del 70 o Mailywood Med. Halyward 38 Ca thernta.

MAKE Money address by Physioper Our informs in reveal now Only 300 Bust-nes Dept 66-L P Q Box 2230 &t Louis

\$1 000. \$4 000 \$10 000 BEING Blade spare time at home. Simple Mail-Order secrets shows you step by step. Details 25c. Port Book Service. P. O. Non 453. Port Chester New Yo. b.

MARY Many At home by mail Part Easy Liebig Industries, Benver Dam 2 WISCORALD

50% PROPIT on name brand watches fiend for free circular Arro Sales Co. . A. Brinton Rd Pittsburgh 21 Pa

But ce a No rick Success Plan Pres Treasury 706 Webster, New Rochelle Pic at How high

PREE 101 Pr Stable Small Bust nesses. Ama one ob service of and Walk Hung Blart Spare one Deumant Bur-

Details free Business Burness 365 de Ferriet Lat Angeles \$1 California

MAKE \$7600 a Year Spending 5 Hours A Work Start At Home. New Machine Small Latentment Free Booklet A. Z. 442 M Mer ern Wiebrita 12 Rutians

MAKE Money With Wood-Ask Us How The Darmers, Great Bartington Mass

OFT Parts 50 60 merchand at 62 60 treatsee 100 money makers \$4 60 raise \$5,00 Karn 500 Wee 6ath Critical P like wild. Replaces mesay rags trouids bimply glide aver glass flam, see sout on Irial Eristee 186, Akron Ot 19

MEN Wamen Address Inider Cards Por sety No Deposit Eur or s'art of addressed envelope; write Allen Company Tiller Arkansas

ROBARIES—Make Your Own Per effi-lun—profit! See complete line of re-ligious goods—sold filled and sterling re-sary parts. Medals, books, statues, novel ties. Big group of make it was set from fiend log for New Wholevase I leater and Go alogue such of the area beggs to an every to read of the area beggs to an every to read of the area beggs to an every to read of the area beggs to an every to read of the area. Pittefeji Mam

MANUPACTURE Rhinestone and Pearl lewelry at home. Latest creations trewerely no some. Laters creations tra-mendous proble to all a modest Postenral for an illustrated catalog at actings to one size A V Cott Co. Inc. 310-H Fin Air New York 10 Hen York Hall macey details Free new Bulks. 13:49 Mts. Atomic New York City

LFARY protessoral candy making profitable home eugenem Details from

tak I his on by Mad Keep 68 Terrid Bridge 6 2 Mar.

STABLE a Mailorder Business on small enging Detera \$1 00 Prod Mottleb Bus-

PARM MITT Aparetine Banes er Pres Litera ire Wiese 1216 Pranting Waterloo, Iowa,

WANTED. Typewriter owners Bardneme pror s. W. ste. day (troves C. n. a. j. 48. statistings I Memoria. EARN Money & er new e. oss e. and

E i watche rise to carto in for advertisers Admirate Argone 2. Wiscourses

Be Y Whitesa e Nationally advertion products I car done discounts Paris a in a step hoon O Mark Box 335A Mar-

More Pos ca d briefly details Kernett Costs wait? 1017 P Wannagton Houseon. Terah

101 WAYS To Make \$1 000 At Bome res Details. Business Surveys, 345 So. Fairfax, Los Angeles 30. Casit

EARN \$10-1 00 Weekly in hide oper ated Mad Business We show you have Write arms the tiest Richard beorgie

MAKE to 14 36 hour doing respects per 101's C Burth jetter na Ra ional Affista Marsa a Dallas 3, Texas

SEND the Who east O't Ostalague Oufts, Box 2929 Odessa Teast

WERKLY extra messne mading circulate for affectioners Complete it a ructions for Enterprise 7. D Barford Boston 36 Main

DISTRIBUTE our magazines questiga Probastic numerous Experience unpercemry Your hand, address practed as pub-taker Semples materials featureling \$1.00 (recordable) Wright Publications 276-P Bubbard Momph's 6. Text cases

PREE Scot 165 Odd Successful Busi-brees Work Hotel Expert something Odd Pastin-36C, Oreghania, Cant.

FORM "Money Octor's Oulid", see free not many on money making thei, befor to discounts 13 months \$2.00 -3 ample let Cottag O.P.O. \$73 free York 1

MAKE extra dollars immediately clip-ping newspapers. Complete instructions 6: 00. Clipanews, Box 1623, Dallas, Texas.

MILLIONS For Small Businesmen Large list, \$1.00 Proven Enterprises, 234 S. Wabash, Rm. 1. Chicago 4 III

1000 MONEYMAKING planet Folder free Newton 506 Cherry Boulam 5 Texas

HAVE Morey Maki e Home Mail Bust aris Complete Idea Ma bus to see Per-sonal help assures mocess. NMD Agency Box 88-C Dorchester 22. Mass.

PREE Polder! How To Make Theosands Yearly Selling By Mail The Way That Page Pages 32 # Orecanous Potation

WE Pay Cash for Buxtops, Labels, Wrappers, Coupons, Bottle Caps, stell Par liculars free, Boxtops P6-963-E Main, Coumbus 5 Ohn

MAKE Yourse ! Pinancial y Independon! Bierr a Unique micress proves Mail Order Business that a reast Tops. No Ca, al Needed Write Sears 7918 Octobra Ave de NW Washington IS D.C.

VOLE ideas are worth tog money Ex-petiers of cut so tar's will develop and so I your ideas. Top notch engineering service at low cost. Free information. Scientific Enterprises. Bux 2100E, Cleve and 6 Onto

HOW To Larn Up To \$500 for such Script, writing for Talevision. New Distantial Particulars Free! Wondering Products. Box 2112 A Manta Pa N M I RAHN M. w You Can Own Successful Ma order Business within one year No.

Pree! Write "Opportunity", 166-K Mon-tune. Brooklyn 1, New York.

HOMEWORK! We Pay Cash! Experience Unnecessary! Mirach, 1361-B Bos, New York City 50.

NEW practic oversating carving machine. Dur incoler Pub and profits parring plant to Detain sample for Desce Dr. r s Child Z Separiceds. Van Sura Cal

MAN Women. If you are interested in ddressing advertisms interesture for heloom from ruch to Kamp for further inemalten Adrertters be the Bus 407-PR han these & La fornia

TO \$35.00 Weekly. Upholstering spore time Instructions \$2.00 Custom Upholster of Oxford I Penns

AMAZING process premunently seals than an approve series etc in plantic Farm entra motor taking sedere head soc and two thanpabots for behand there and purticulars he undaha first order bursely have but find P Los Angeles 48 Calli

ADDRESS severtising posteures. Must

BEAUITPUL Prainer Pictures Fronti Free sample, Apertado 2036 Max-100 L D F

\$48 IN Personalized Baby Record Bonks. Sell By Mail Use Same Literature We Du. No-Co-Ro. Outland 5-P Caul

are WELKLY addressing envelopes In-Structure \$1 to a dat a

FREE Complete Mallader Barriega' Terrific Profits No investment. Write to day Vita-Mins. 2006-PB Severly Boulevard La America i

WANT to retire? I did at 36' Delightful art up brings me 61 000 monthly to any mat add ess hasily duplicated. Around our pr duct I i nied a countrywide marher he team court, of he use set at rema BUY Wholesaid thousands nationally your product Details free, Williamson, 21 invested products have menty Make N Mt Trail Sierra Madra, California

BE appointed Notary Public, your state America's lowest cost. Thrilling experi-ences Additional lucome. Men waters Young old, Write Box 3025. Dalms 2 Tex

Products. Southwick Street. Fitchings Mantagements

MAKE big money mailing our merchanthise catalogs, sample catalog, details 25c. Products, 526 S. Western, Chicago 12, III.

ALMOST a family tradition, our ex-traordinary home maliorder -a rere kind we wise ed years ago goes on giving the \$12.000 a year (hear 25 years)) practically and reded Wo address a be matting as orthogod by budget steady income system Details from The Horse and 1674 Somet New Orleans 16 Louisiana

BUY Wholesalei Thousands autionally advertised Hems. Save—Make Money Pres Details. Dures Co. Son 573-H. Chitage 60 I (chess

MINIATURE Trues Why pay \$2 co-66 00 for growing secrets? Proc Details Bassett Dopt. A. 8640 M. Winiares. Chi-

work for a Medical Supply Company Deters \$1.00 relundable. P O Box 163 Madasin Ohio

3D FORMITAN PLANS FOR

PORMULAS—All kinds, Latest products Literature free Kemico Park Ridge 15 E.

FORMULAS One way mit? see through other side. Typewriter ribbon retewer. Do at each Both \$1.50 Bruce. Ben 34) PS Paio Alto Cu.

paid A eq Dep PSC Cut, on M sacuri PREE Formum Cata or Apy hid a a-

LABORATORY Tested Formulas Cata

log free. Pont Chemical Company. Terret Haute 1. Indiana.

PROFITABLE—Formulae Flans—Ideal for abyone desiring extra income—Free Details Clanwood Products, 638A New Street Universities New York

ANY Form on \$3.00 Chemical los ruction Sheet—entalog 10c. J. Bellort, 216 W Jackson, Chicago 6.

LATEST and best in modern manufacturing formulas since 1897. Litera are free Lescopia Mille. Citemat. Tamba. La.

Plastics hame-crait course or Men and Wimen Tells and shows how to make mandreds of tast set a plastics products, At plastics and materials for 25 pm. eers included in course. No special tools needed Course pass for one. Write it is been back at Informatic Traits of Service Dept. D1 M. Pursland 13 Oregon

NEW hould easting plants their colors. Embed flowers, threats came Saw drill carve. Send 250 for Castolite Creatolite Manual and proved Success Plats of Ming by to make to her at bomb Castolite. Dept. Mr-103, Woodstock, Ill

LEARN Plastics at home Complete course \$5.96 postpoid Dime brings sample plants to three experiments I for delicate Project Box 515; Detroit 35 Mich.

PLANTIC Storts Hots Tubes etc Pree List. Plantic Supply Co. 2001 N. Grand Bird H. Louis 7 Mo.

Pt LX-OLAH Lucie Ary son aborta Hquare root (3x12) cost 1 10° 5, 10° 5 21.5) 3 10° 0 20 50° 52.25 Add 13 for postage M nimits offer \$1.00 Admad Plantics 800 Broadway New Y rk C-ty

Prastita tements Dyes Findings - Carry as Wholesays prices 44 page on a segment from Trace & Carre partern book for carving and coloring fish, birds anymals only the Taylor & Art. 1 r 1518 hast 12 h Procedure & Carry 18

Diffic TORY of Many acturers for Institute parties as a small cubber we deale Car leco 2:495. Paterson, New Jersey

Fig. RGLAS Posses of Pietra as Arctate. Vinyfate: Cantage conting plantics My own Fibergas "How" book now ready \$2.50. Fast cervice best prices. Catalon - 10c. A mayed by Och O Lite But 6364P. He to Hapmond California.

UNUALAL Chr a mag decrea the materials to out thoughte to a mile had Horn Passtics 1905 Ingerson Dec Moines John

TUBING. Wholesaid For Model Airpures Retrieds Litemace Expendicula
Lic Se d For Samples Technical Data
Juc. Hoby Villa, Surbust City
II CHIMICALS E UPPERSTES

NEW Idea C on ral a d N eta O C Bis for Home Exper menting Pho Scares Microscopy Bu o es a Sina Que a se Ca and Zoc I N ab sted 1921 - H W 124-B Wes 2, d n get New 1621 N Y

SPECTROSCOPE for quick chemical are your \$3.00, Cutting Suits Los Artos.

LUMINOUS Paints will glow in dark. Bir colors, Parmount Chemical Co., 126 Liberty Bi., New York Ci y 4

ILLUSTRATED Cate on Chemistry thineralogy biology for Tracey Labulatories, Evanston Illinois

CHEMICALS and apparatus for Industrial, analytical and private Informatories. Catalog 25c Dept M 26 B notice Supply Co. 1174 Mt. Hope Ave. Rochester 20 N Y

MER I Rt 25c per nunce the recreme at d coemical for a purity a chronical garden 50c postage included. An impresacoustic experiment for all Nucleus, 1558 Minford Place New York City 60

AMAZING New Book of Seasons Experimetals forms as and catalogue of Laboratory Supp. es. Only 2 to Nassons, Scieni fic Co. Dept. 15, 2304 W. North Ave. Chicago 41, Labora.

CHEMICAL, Supply Catalog, 15c, Laboratory Sales, Box 161 B, Brighton, Mass.

12 HFIP WANTED

PLORIDA 1050 Tampa St Petersburg Clearwater Help wanted columns \$2.00 H. Minsenberger Box 767 Largo, Piorida.

Work It interested in foreign projects with high pay write Pareign Service Burens (Liept P 5) Metuchen New Jersey

100 000 NEW workers wanted now in the De sware Valley. This ade phia. Camder Wilmington Industries are spending 2 billion de lars for new factories Send 17 00 to L. Melanson Box 1002. Kennett Square. Park in ormanion.

FOREIGN & Is in American Employmet. 1952 Pereign Service Directory
g es to In Mr of Paris on M tary &
Collat. Construction O termes. John
Ma o. Or I sough Antable Transportator Seamer Lives M on important
Entre H a Wren Where to a py
a scatter forms H of List Firms Hirt. g
a 00 past and Coubal Reports Box
(A) S H valued 28 Ca if

WORK overseas 2) from seek og app'l Cathols 'rom construction men equipment operat a cierks ak sed etc. P. a de talls on 260 overseas projects underway (Eve v. masur. C.S. contractor with ne about Transportation paid Overs me On a me about ed ears \$100 meeks laborer \$1.5 Project a same bound manual Application to 15 miles even at \$1 Johney son Del Bert 10 Brangs Messana.

FOST (N Job Mens and Domestic Bend \$1 to 1 W. r.d. W. de Construction Projects H. W. etc. W. etc. to hippy On-bal Reports Marchity Bus \$11 fts. Hollywood.

ADDRESS advertising posteards Must have good handwarting Lindo Waterlown.

CONFIDENTIAL reports Nighest paying John to 26 countries, including US A sits South America P rope Middle East Many exeture \$1650.00 mas 1 p. 5h led units and sabinets trades supervisely ries to a named Outr \$2 line of iguate trades in guarantees National Services Settle in guarantees National Services Set 29 484 St. Lante 17 Missouri

Al ARKA 1 am American Propier at 60 h aga 1852 Bu and Dissertor & Greens and Map Military & Civilian Construction, Homestend & Richway facts Mining, Aviation, Par Parming Grazing Timber Travel directions, List of farma hating How to apply Alaska Opportunist Box 32-8. Bullywood 24 Calif

\$1400 to ment of the control of the second the second to t

JOHN Freign and Domes in Bupers; sort Terbuics. Merha on Certical Majure with his argen companies the wind over Opport on a "hishest salaries and free flare. Send \$1.00 for alea, complete details and application blanks. Our Research Department headed by world traveler 30 years experience. You need his advice. No job service equals this Will prepare and type your individual jetter of application for small fee. Job Application Service lies sound Baron Rauge In

booming expansion has created tremendone opportunities! All Fields! Huge Job list, housing information, etc., just \$21 (cover out proceed that here). Employment he are M Box 182 Pt Lauderday Finds

GOLDEN Cattornia - Men needed Thrusta de other et J. by to \$5 000 06 year unambled \$6 000 00 year ek ed Ar. N. a. Rei d \$1 00 Cu if re's J b thus by see the h of J. J. J. J. J. Co. N. a.

EMPLOYMENT SERVICES

POREIGN Jobs. Contracts underway and har start a in Actica South America Cauda ha and Furope Auth Pacific Middle East Mexics and Austra Seed \$1.00 for fize go job news in a traction are see in I me etc. 1878 Provige Job Mens Dept. 265-355 Bridgeport In

OVERSEAS Jobs Buy pay (ramaportutire experses (series of ess a) macha ca a tere Mat al trades Latest setted air e eras suction manufactur is a steamwholl companies a ser ment agercies may other control ter to to date so orma on on second a recomment control a sociame tax application serms \$1.00 Overseas Jobs But 135 Bub Baton R. ce I

CONSTRUCTION Job List Published Many 4, 60 Deeps er a Construction South News Dept 2-8 NU Bridgepure Id

45 AGENTS WANTED

worder lough Shines care quickly Detall Free 2 (at can E) S at Dust 465-G Mad son Port Wayne Indiana

NEW John open in selling! Bend name address for five ree saues of Opportunity Magazine's moties making guide hiting hubdreds of companies who it pay you wen full of part time. No experience needed Opportunity 28 E Jackson Dept 10 Contagn 4 Lanois

POWER Mowers Wholesale Warehouse ties after New used Terms Rotacut 32 Excensor Springs Mo

at 66 PROFIT pelling \$2.95 photo enlargement offer Allen Studio. Riegier Bldg Little Rock Arkansas

SELL Thousands. Tele-Pep (TV) Unit— \$2.55. Sensetion. Franchise. Smith Agency-VPS. Exculsion Springs. Mo.

BUY Direct Make Estantional Profits Sell The Most Beautiful Gift Packaged Jewelry Line in the country Details from Cortes Jewelry Company 176 Frankin St. Buffalo 1, New York Dept, P11

AUENTS 300 profit se hits genui to gold wit down setters stores and offices. Free samples Metallic Sign Letter Co. 431-E 5 r F Coark Chicago

ABSOCULFLY Free Sales Kit Yours for he asking Send posteard today requesting kin also wing new also belt back es with your name of personal instinction cap dudges chance 1000 d Serent ein bients. We've Hook Fast. Box. 1425PS. It is desire R. 1.

OOLD Biver Inquered letters Windows doors trucks Standard sizes Penny and up He profits Samples Atlas-S 544 West In h. Chicago 30

START Your Own Business on credit Tour own bore 16:30 of our Dealers and \$5 000 to \$2° 500 in 1852. We supply stocks equipment too credit 200 home necessives have experience upprecessive Paramit profit absents the Basics experience upprecessive Paramit profit absents the Basics backet by world absent dustry. We be Basicship Dept. E-U-PRC Precion. 141

1954 WHOLEHALE Dealer Ell on appliances to sen term per refers cameras a sware a a finite se Free Witte Arcia liner to a 1943 Nassau St. NYC

ANY INC. Car de Jamous Marter Usptorns for bearly shops wastresses outsite doc ore others A popular hillsche labcite is a dariot strong Excise ve sives top quality Bar cash income now real tuture Equipment free, Hoover Dept, U-101 New York II M. Y

WELL Maincie Orion Embridered Work Discussed I note force to some like wool, where I there for per Ou weare colon be a Acid , set a conservate and was income per solution of the Acid , set a conservate and profit to the Colon Area and profit to the Colon Previous Pept B 541; Recesenter Ind.

Pt Y We seem to the distribute Present Present Present American Buyers.

HENNATIONAL Be guins Profits Su ta 83 % Pa ta lac D esses 20c H ses 20c Operate from store, home, car Pres cata to Super a 1000 B Jefferson Chocago I.

Bid Money that if apportunity Excupling the his a unit the Jackets pants, as the cive at Advertum gembro, dered hiera bus, eas prospec the fit her Manter 124 Dept. 24 Linouter Lidians.

MAKE C stmax Money A Rome
Take in edga and subscription for all
make a commission a formal
too a Commission b herything care
a sied free Casa 4 Wate McGregor
Make the Assure Dept 5194 Mount Mot
ris. Milliods

AGENTH Show America's leading Materials of Ade used the Novetes Gis Utility Items 100 - Profits, Prospects Everywhere Steady Repeats, Write today for the unit of the profits of the Profi

MAR to earn 1100 and up per week Lot a needed invention. Advertised worldwide Prospects are everywheth, Pull of part time Excusive No investment, Pressant as Wile Red Comet. Inc. Dept. 15. G I therein Literatus

IS \$210 a week Worth a postcard to you? Then rush eard with name and address for apecial Free Trial Pian that seed amang aw Au omane Revigers or Detro et he hot cakes Write to Mr. Leve D-Prost-O-Matte Corp. Dept. H 103 157 W Mad.am. Charge 2 1d.

NEW Pustic Mer Sing Tupe Just premail Repairs could be hasted by Lightness sent on trial, Kristee 125.

Ak. n. Oh.

CALLEOHNIA sweet ame and beads sens

BUY We essie 25 000 items Catalog 25c Matthews 1672 A2 Broadway Haw York C 5 26

01 WAYS To Make \$1,000 At Home. Details free Business Surveys 365 So. Fairfax Los Angeles 50 California.

WHOLESALE catalog! Nationally Adversied Merchand se Pette Co. 1554-PS. W 11 Street. Brooklyn 4. New York.

BE a Jobber without inventment, with-out inventory Discounts 50% and more-even on small orders. Dyan from \$250,000 Stock Beil stifes individuals Profit up to 100's. Ter he ame toys galtwares appliances, sewery over 200 stems. From Catalog Madern Merchandise Dept 54 160 W Madeson Chicago 2 Il Inots

ACENTS Salesmen Se, beautifu hand colored plastic en argementa aud se a those practice en argements and set a those new persons, est prints compacts rings bracelets suckets etc. Expert countries and series community so advance communities was de ter concect. Will define inde e better full time fire name on the Novel Portrait Co. 2143 North Ave. Chicago. Ill.

BELL new contains Lowest Prices Oper Profits Bug Catalog Proc Ban 603-C 13th Proce Chicago ?

B. RIKE I. Rich with Sunnel bucks Sei entific table cover market it preside not been be ter aban esteer. Ou casta 16 years bert 40 Citicinany IP Onto

Ht V shores a gild save 30 on the panie mercha, dag, Kmas Gifts, Make his profits selling your friends or for your own use Our 1953 Catalog is read; Rake 607 PS Spring Dayden Philade phila fe

ATTENTION phers wage men church groups atc. Sed Silver Grid amazing new magnesium alloy silver cleaner cleans mmediately automatically large profits. Send the for sample information Portion depends of Special States.

NEED Extra Cash' Get it se tog B a r a unusua line of househood and rood produrts Every housew is a promoct Send or samples, worth over \$1.00 to a a on Free Trial. Write Blast, Dept 35a.K Lynch burg Va butt

Ht Y diret from fact ry net and dry Bupa Writure obre brooms e c Ca a logue free Hamm Broom Co McSherrae town Penna

MAKE M mey Introducing World's cut ant chi dren a dresses. Big genetich ador-able als es Law p ces Comp are the ap free Bush name Harlord Dept E 3341 Cines Lats 28 Obto

LIFETAME to am n business' Bel, sen Sational Pood supreman. Request \$ 00 at a smooth & supreman \$1 50 postpard Money Back Guarantee National Has h Freducts Dept Ph 156 Broadway New Yurk Ja

WHERE To him 600 000 Articles Direct from mathiacturers at the rane piers Save up to 30 on nations y advert sed marchandine Rush \$1.00 or big 52 pear-book G ass Publishing Company Estated

MAKE Extra Money Sell tront door name plates to Irlands, beighbors. Retail \$1.56 you make \$1.00; Free selling kit. Modern Engarring Co FO Bus 154 Boston 14 Mass

MAKE Money Spare Time plus New Car as encouragement bonus No house-to-bouse can say required Amail a so gauge nylone i pairs guaranteed i months or replaced tree. Write Wilknit. 26311 Wash. Greenfield. Ohio.

RANY hands on makes fast see for use fus at leave the mant ten buttmade Company Brockton 64. Mase.

PREE hustery! Introduce sense of a honory by giving every man and a war free as part u prive him good her a e Americal rigion stock as fine a tend against runs and spage New mace are fire vith the hap a reigh sicks Compage the elastic ret fit any at a soct. Never and Com able the second it in Attant it at a warme Max pares de l'tree sav pie strekte a d miner making with a Aber a r y tin chagation Kendet Baby on 14 New York

BALL Pens \$10.00 Gross. D.E.S.E. Biade B4 7014 Need'ebooks with threader \$6.25 Gross Lutzker B. B East 170th N T C 50

MALEMMAN S.O.00 a day den . e's Basured se say bra d new I em g . e to every type of find and beverage store per Purs thed Common Parkers Sheet Jackson Bud Dest PAT Concept 6 To

FRFE book 505 Odd, durcess a, fi di-Desire Odd Parific-18C Oceanside Calif.

POG S op" Windshield Cloth, Instantby removes blurry M to P. to 5 per 5 w Brook windshield forgang Bamples sent on trial. Kristae 124 Akrun. Obio

PART-Time or full time sell at manufacturers un prices e en son wire to viur local Appeance Rad o Service Repair repeat orders. Season now starting buyers will welcome you. Write today it r free Samples on charge King Mig Co-Buron Road Yonkers New York

SELL Auto Seat Covers. Up to \$10.50 every order Servations, new materials: amaring low prices Full tune of space bours Own crat rovers as honus Ex perience unnecessary Write for hig Free taies ou fit and samples Key P idue a Dept 26331 300 N Clark St Chicago 30 [1]

ADDRESS severtising percents Must have good handwriting Lindo Waterlown Made

MEXICAN Peather Pictures Se on sight, 200 - profit! Pres de alla Sample 20c stamps No Colna! Sylvias Aper adu 90st Mexico Citi

MIG profits seiling ties (\$3.00 values) (\$6.50 de en Pres casa le Empire Cravais 61. Broadway New York 12

dENSATIONAL money-maker' New portable dehwashs a machine sets on dam beard washes dres a dabes or average fact y of the use automatica t Z ds d meaning drudgery t day a co ac our Dept 108 22 W Direction Chicago of the

B Y Who ean e thousands ha ros a y advertised products flavo to mey Make More Posice d beings details Remain C mpany 301 -Q Washington House on

QUALITY Ton Tour profit 140 a og free Loren Speria tim 435; B Flour Buy Chicago 14 I to sea

DIAMOND Dut butter Agents wanted tanc sed territr diamond durantee full alled with a rings as well us after to e and advertising mate Bend for one or more of the to ming samp on Genta or ladies diamond rings or sets. Retail price -8149 95 8290 96 8450 00 8600 08 Dealers price \$41 50 \$124 \$ \$1 is 50 6.40 08 3 bbers price 6. 25 8116 50 6 93 50 \$720 00 As a die buted you can make acm at 200 pr 1 or og trese same pr d or's for \$50.00 \$100.00 \$,50.00 \$300.00 Was a at once to Diamird Esterprises 160 McKean Avenue Duttora J Pa

Plante Polich (C) h rub-on/ Nulli, ver 506 FW.1 Aurora | stock

SCHOOL Sections. Have Fun and Spend. ing Money Be Popu at With Your Case-Die de cards Scr 215 M Pittsburgh is Penna

Shi 1 Mandauren Stram Barnes

AD Marche Bell Amesting Designa-Bargest spot tash comm sales divery busifirms a prospect com pres for frah qual ity Repeats Start without experience men withen full part time Buy N the Dept to 67 Chicago Id latious

\$1000 A Week Oren Triple Profit Plan Ed kar Johnstown Penns

AD | ERTISING book morehes-Cash in ub big dema id se to a jatel tin tire.
L a T are bus resers and sometic par orders Cash commissions Superior Match Co. Dept P-1153 7530 Oceenwood Chicago. (

NEW Tax Experies And unit Report and Frontie Tax Seducing Review in Review in the ino. And Section 15 et au d'idual a
port 00 au d'up la chirer o bus cas
men a auto datter a section in 10 se un
den course son Sea d'aute au d'indices der arair sen er apprina de t up Ban Mar Hustin in Trans OFFICE

INSTRUCTION

CHITPAIN F BEDCE Books and a d r ed Micro back goal a re fan g eg et a sea Bounts i

to the Service No Casses Study to the Sar the De Ta about the star Few casaling HHA to the Sale of the Service Study of the Service Se a warded

2.61 A Nevt ob gatum E as Box 263-M Cedar Grove North Carolina

HE & Rea, Estate Broker Study at home r In case and a radiu (1 les W e r Pree Book Loday G I Approved Weaver School of Real Estate 36) Law B dg Ka san City Mo

LEARY Deat e Pastert method Low erat pay as y unearth plat. Dru Cequipo untern Fire Colored Cenco I dun vial Iron g Services 1706-B Frederica Fort Warth I Taxas me t ur ished ? ip grade indus ? a. t.

COMPLETE Your Each School at home in spare time with 16 year o. 8 school Texts furnished. No classes Diploma in-Deut X846 Dreuel at 18th Chicago 37 Ill.

PRACTICAL Nursing searn has y at es 1.45 High Schot, Bot recessary W = 1 r t e a. t Warne School Dept PH 20 2525 Shethed Chicago 10 11

START A Buying Service buy wholesale thousands nationally advertised produe a Make hig probts so its at sireable 6. scoupes Postcard bil de deta a Ameri-

WELDING training pays at Hobert Welding School Sur P 1111 Troy Obio

WANT & Diesel Job? New Opportunities a increase the me Hage er Pay Miste We can he p you Quality Tous S p method pane the g Write to-day Diese Trac of Heavy Equipment D stor trees are Tra one Service B2 M Portiend I3 Oregon

HCW to get Makey I am ted most Motion Connections of a to occase your plane. Name H w to get a new call & hout at record you be to occase a dor a record you etc. Only \$1.00 Law a 6000 Lake Park Chicago 65

No RED HIE Become Menta Super man Oversian Free Book to Bring Box I J' VH H wyw od 28 Car office.

STUDY for Degree of Doctor of Prychaigh (Ps D.) Doctor of Metaphysica Ms D.) of Doctor of Hivin (y (1) D.) Wr to College t Do no Metaphysica Dept P.S. 2011 North Hiddols Street, Indianapolis. Indiana

A Profi able Business of your own Better Joh Opin tu tes and Big Sparetime of Cus of Cultusters Earn while leathing At Hime frough N Y State Approved UTH Course Course for ade: 4 State Outlies of local frames materials to make beautiful furniture you keep or se l You search furniture car uphs a rey gain behing tip outer ruthion window rorthe drapery making! Free book tells asset he booking bus ness her you es not how Welte Today Up he sere Trades School Dept. BE-6602 721 H undway New York 3

FOR an extremely or Diable histories but each special a Co. or ton Agency Quick v learned. Write Gole Associates distances 2 New York

THE A B C of electrons stoms and motecn to we determine perman and a ment a motecn to we de training perman and a ment a motecn to the first of the first o tween electric and magnetic fir de l'ie hidden Jorces which con a ie the electrical to asome and these to masquies riquids and so do in a progressions present The of frees of go a sed and him ight travels through space. The sames of ers or resease in modern or or comic to re-ceer instabil or receipted to be by seen mass and elergy. The strates and bid carbons with many I us rations. Many other dates as a series of a carbons by evenum \$2.00 and paid to Frank X. Graper 20 Lee Ara Lindenburst. New York.

MACHINE Shop I sains teed a be store a make a book of acousticed a be store to make it as a to store to be stored in a to store to be a better to be a better to be a better to be a better to be a best with the property of the the property

BECOME a Doctor of Payer ge Me'a sica basis esa W With denice of PaD or State t e s. Iruth ,0 6 KBr adwar Chicago

MED: 42 Laboratory Technicians in great demand the train you in you and the County greet imperior Technical line with Branch 2012 B. Austin Team

Hold Served Die ma At Hime Liebted Teachers And and Teachers And cet sed Tearners A . A Mater an Furnitied Sinchert, Stnies Academy Braste A Stantor E Asianta Cia

MINISTER 5-laymen a religious courses Pres Bulletin! Midwestern Schools. Merchants Bank Building Indianapolis, Ind.

a den stoub Companie. course at ance Best for your money Write fails. General Products Co. 363 Ave. South Minneapolis ? Minn Write fir de 3636-17th

OWN A Collection Agency Big Money! Prec booklet. Franklin Credit Roanoke T V 28 76

Over D FSEL CHAINE Close out arawers 21 drawings and leaning lades to so Established 20 years. As hot died Bud 64.1 Pet aburgh 12 Pentuyeranta

61MPLIFIED method teaches algebra instantly \$1 guaranteed, Ziemben, \$121 Orchard Dearborn Michigan

EARN While You Learn Auto And Diese. Mechanics Master this top paying trade Many graduates earn \$100 a week and up Approved for Korean veterans. For free information write Dept. No. 262, Nashville Auto-Diesel Codere Nashville 3, Tenn.

FREE home study course in busic secnomics, affered at a public service. Recommended by many leaders, Send poster of or complete information. Henry George School, Dept P 50 2, 60th Street. New York 31. New York.

POPULAR Piano. Rapid Course. Young Studies 7051 Midd epoints. Dearborn Mun

BTRUCTURAL Drafting, Home Study Roth Lechescal Institute, Dept. \$11, Box 7243 Youngstown, Obse.

UR Cost Service Jobs Start high an \$318.00 morth Men Women 10.55 Quantify N is 30.006 jobs niven. Expert de of en autoressant tiet Pres 16 Dags took showing jobs sa aries, sample tend M to Pranklin Distitute, Dept. G-23 forchester, New York.

tisk i Co-responde or Courses and Edses as the ke its ages Hold Rented Ca a ig Price Educational Exchange Sumtures a Consegue

INNER Proce emploined by natural has process can be pours for his arrest ed Unbellevable but workship term a few Head \$1.00 for your copy of alman, or I to res Know-How " Institute of Punctional Research Mox 4860, Washington & D. C.

WESTLEN Schools, Inc. Extensions abbraring 3000 5th Ave., San Diego, Ca.of

ENGINERAING Drawing self teaching 430 pages Davidsen Co., Box 1232 Eac. no dido. Calif.

CORRESPONDENCE nourses educationat horiza bought soil routed excharged Reasonable, Lists free Magnotia Freestion 1273-6, Burbank Calif

120- It Durate Stead B cort a Make Arrivan Seren Print Strong Core Bris Hant Bernsty T a momenty Ross Rived frame at Joseph R. d Powerful Mancies, Early Only 6 30 General Printers Co 3636 1206 Ave. Son is Manuscopius Minus

BROADCAST Job? F.C.C. Receive quickly Residence, Correspondence, Dept-3 Oral tham Action: 5004 Hollywood Bird. Hollywood 28, Calif.

ADDI ALIGNAL brooks used corresponds erior or a sea brooks? A di restedi casa di tree Willard Barido 221 Bases Hackittasack New Je sey

BELDENIZED O true Degrees through House B dy Talise Cooleges 510 W Purito Rent Nevada

46 (0578.575

WIN Contest Money!! Mutual Cuntest Bulletin gives many tipe. Lists Current Contests. Rules Qualifier source etc. | Ban.p.s. 75c. Mutual Contests, PE 163-X Majq, Columbus 6. Ohio.

CONTESTING provides (abuses) home income for thousands. Qualify your tutries through the original New York services project. Endicate stamp Natural Contest Bulletin, Box 2685-PS, Minmi of Fig.

47 319 TECTAVO.S

STRUCTUR Training Philips Secret Service System Lett-C Horth Kampath Colonia 19

DETECTIVES—Work home—Travel Experience unnecessary Detective Particulars ires. Write, Warroner, P-125 West 56th, New York 24.

IN I ANGLAGE OUTSITS

11 g Quick Easy Fon To Leave a Language by Linguage Le Al home in tender me opics i may er Pirito Byanish. Deyman, Horstan Japanese W Anguages by Linguageone World's Standard Conversational Method. You listen-you hear men and women speak-you understand you towak rise money Oan descriptional travel, cultural opportunities. Write for Pres Book Linguaphone Institute 5411 Mezz, Rockeleher Plaza, New York 20, R. Y.

INFORMATION, NAME TOTS

WOMEN Mail Buyers List, 65 to thousand make and Baren Burer New Jersey

LIVE Mailing list, All Types, 1980. 85.00. Quality Salet. Box 2274. Ashevalle N C.

FNVELOPER etc interred addressed and matted Any vilume Reasonable de pendable and accurate O J dieffent 112 Bo. 34 Street, Omaha S, Mchenska.

UP To-Date Opportunity Senters Names. | 1000-\$1 00. Gilco. Dept. N 30 Magazona. Norwalk. Ooks

MAJLINO Luts. All kinds 1000 33.00 Dixio Service King North Carolina.

PECIAL NERVICES

Li This Ar Ma ed From Old Metico Mexico Coy Gradaugara Maca an — Ous note Hermonico Sciol Pue a d 200. A. Espejo, Box 217, Tipana, Mexico

FREE Christian Mental Treatment. State Trouble, Stamp, Eleasence, Gaylord 22. Michigan

IF . First remayed from Chicago 25c atronau, 50c McM en 4055 H Albany

CONTROL SERVICE

NO luck finding a book publisher? Write for Free Booklet PS. Vantage Press 126 West 21st New York

RECORN NO W. or a cost \$1.5. \$20 others a day of the property of the conditions at the a time of powers in a sure transfer of the conditions at the condition of the conditions of the condition

ADVERTISING

ADVERTISE 24 words, 100 Canadian Newspapers 40 36 Lists Free Advertising Bureau, 10511-P Springfield, Chicago 43

500 RADIO Stations which accept advertishing on commission and 200 Maga lanes witch give bee publicated in advertishing and a New 42 00 feet star total guarant cod. Brass Box 1006-PS-2 (history 100

GFRMANY Ind strist Expert Import directory 45 000 addresses. Empish index. 58 00 Protpaid. Joseph Burke, Manchester 3. Mass.

ADDRESS advertising posteards. Must have good hunderiting. Lindo Watersown Mass

UET Thousands of Dollars worth of National Advertising for your new prod et for only a few dollars. Williams Ages 1115-B-1 favestment. Bidg. Pittsburgh 22 Pa.

CARTOGNING MIGN PAINTING, CHAIR TALKS

Prow To Make Morey White Small Cartonia A back everyone who after to draw about here it is see he obtained in Simple address Carton sta Exchange Dept 191 C Passant Hill. Onto

SION Painting problems answered Information, Old Timer 357 Maple. North Hills Penns

CAR CONSISTS Amother Protessional Prepare for A onto in with Mak Pictorial er's plant Wille Vern Collegan, 66 East fand Street New York N. V.

PREE Trial Curtooning Lesson To Test Your Talent, Write Lee Japanese, Spencer 1, New York,

PRECLESSOR Cartesort of Self Laught Man e I 500 Hayes Haveton Pe a

FREE Cartooping Lesson to test your taient, Write Purge, 1858 Kenduskent Ba per Marie

HOME owners and professional people. Do y a have trouble go to a day again that you need. We elled Kanger Enterprises, Coulma Microgan.

CHALK Land Laugh Product & Program \$2.00 Linestrated Catalog for Cartoonist Baids, Oslakosh, Wisconsin,

TYPEWRITERS &

NOW! Protectograph Checkwriter Proc I tera ure 1- a Cost Model Service But 7 F St Louis I. Missouri

INTERNITERS Pantag Devices Oftice Machines supplies, appliances, Dixie G s n K & N r h Care 114

SPECIAL! New and Reconditioned Typeue e Hala a Type-unity Wholetelers! Basking Ridge, H. J.

1 YPE WR 1 PHS 522 30 up Adders \$12.05, Meler's \$12.5pruce Wichita 7 Kan

RUBBER SZAMPS &

Johnson Press. Box 4-B N T C 26

HREE Line Rubber Stamp, \$1 00: Morey 1 Box 14 Red Food Ci y 2 Calif 5: PRINTING.

MULTIGRAPHING, ETC.

100 \$12x11 LEFTERHEADS 100 \$2 Envelopes \$2 00 250 each, \$3.75 500 Hustness cards \$1 95. 1 000. \$2 50 Postpa.4 Alien. Dept. PSP. Chuton, Missouri

136 6 , x2) LETTERHITADE \$1.00 Torelopes same. Postpaid Louden a. Flora. Ind BUSINESS. Personal Princing. Catalogs

Free Howprint, 723 3 Entire Webster Groves 19 Missouri

EXPERT printers, new equipment, outside high cost area. Get our bid on your job. Mangum Publishing Company Mangan Oktahoma

MIMEOGRAPHING — Announcements Letters, Folios, A. M. Letter Shop, 3601 Marrin Drive, San Mateo, Calif.

100 ENVELOPES or Letterheads 61 00. Printing 21 Barclay Ave. Portsmouth Va.

PRINTING that pleases. Send copy for estimate. Samples, prices. Mercury Press, Box 668 Marchgo Iona.

1000 TRERMOGRAPHED business cards —84 50. Fros sample. Elein. 900 Elmpson St. New York 50

Business of partial Free samples United, Box 103 For Moren 1 Facilities

refees, Biliheads, 84 85 Postpaid Dornleid from Ridge 2, Wisc

1000 [ATTPERMANN OF Statements 51, 18 , 85 95 Postpaid. Samoort Press. Paymon's 2 Mass.

BUSINESS printing Samples Homestead Press, 2718-S East 58th Street, Hue ng' to Park Cand

100 \$1 x11 LETTERREADS, carefully printed \$1.00 postpand E-velopes ealed.

TWO color Bigall letterheads. 500 -83 50. Samples. D'Yarmett Service Newark, Onto

BUBINESS cards samples, prices free Manage 1,76 79 Screet for way po 46 N Y

PRINTING OUTFITS,

DO your own printing Save money. Simple rules We supply everything Print for others, good profit Raised printing like engraving, too. Have home shop, Details ires. Ecisey Presses. V-8 Meriden Conn.

PROOF Fress Portable. Silver Medal Award. Press taken to type, med by leading or to a memo, apera—Buz 204, Adala de B' cet Toronto.

MAKE your own self-molding, rubber printing cuts. Plexiculator Argyle 2, Wisc. Phinting Cuts. Presses Type Supplies Lists to Tail banch Service Logs. to Perna

PILLSHEN Supplies Parter Calming the Curs on Real Master L. S. St. of Seal Master L.

PATENT ATTORNEYS

C A. Sunw & Co.--6-427 Bnow Building. Washington 1 D C Registered Patent Attorneys Write for information

INVENTORS. Par "Invention Record" form contact Carl Maler Registered Patent Attories Woodworth Building N Y

INVENTORIA del discoup for boah et Patent P dest on ser la rentera ar value deta) ed ca elle i l'erroubles und pre est nary steps. Luke toward putent pre est na a a Patence of Inventorial formation of Evans de Co. Bes-M Merilla S discourse de la la C.

INVENTORS. Learn how to protect your invention. Unless the inventor is lamiliar with parent matters, he should ensure a conception registered patent atto very or agent to represent him. We are resturered to practice he see the U.S. Patent Orbes and p.e., and to serve you to hand if you patent matters. Thresh Orde for the Intent or matter that reserve has protected and proceeds a with the obliquation Clarence A.O. Brien & Harvey Jacobson Registered Pale 1 Attorney 128 K District National Building Weshington D. C.

INVENTOR'S Guide" free Frank B. Lede marin Resistered Patent Attorney 154 Narrau Street New York

INVENIOUS If you believe that you have an invention you should had out him to protect! The firm of McMorrow Berman & Day down to qualified to take the receivery steps for you Bend for cony of our Palent Booklet. How to Project Your Invention and Invention Record form No. on gather McMo row Berman & Databam Resis and Palent Attempts. 142-T Victor Building Washington 2. D.C.

PATENTS-Irving L. McCathran. 316 McLachien Bldg Washington 1, D. C. Registered Patent Attorney

INVENTORS When you are satisfied that you have invented something of value write me, without obligation, for information as to what steps you should take to secure a Patent Write Patrick D. Beavers, Registered Patent Atty, \$15 Columbian Bids. Washington 1. D. C

REGISTERED Patent Attorney offers services, Sanders, \$436 Evans, Chicago 37

INVENTORS Without oblimation with for information explaining the steps you should take to see a Parent John N Randolph. Registered Parent Attorney 30. Colombian Hidg., Washington 1. D. C. FOR INVESTORS

INVENTORS if you have an invention for sale, patented or unpatented write Insali ills of Uncrical abventors Dept 30A 631-E St. h. W., Washington 6. D. C.

SSEST H. W. A Delta be for latermetica explaining the steps you should take to secure a Falent un your invention. John M. Randolphi Registered Patent Attorney 206 Columbian Bldg Washington 1 D C

PAIENT Searches 85.00 Reports air-maied in 48 of last Apports in pieps ed Piec Record of 1.10 W. to Harmon d.L. Sm. of Pate 7 extenses 622 Bheta in But dong Ward - stop 5 D. C.

corm on tact Car M et re end al SERVER INVENTIONS Promoted Pare ed Unpatenged Established 19 1 W

Fisher Company 183 Enright St. 7 and Mo.

INVENTORS If you consider a lot totake steps to be some many impropriated take steps to proceed it with a U and States the cut which gives you the cut to ne du cera im making une a stid ne significate um na claimed Patent. Parecial pareciale pate of the Massed propir ty na hister of the line Massed propir ty na hister of the line New Fred Parect Attorbey 542 M Merita Bultiling Wink is to to C

INVENTORS Send for free points inormation book and inventor's record
Registered Patent Attorney Associate
Examiner Pate Office 19 2 1979
At the A Advisor Navy Desar h
1930 941 Charles Miller 11PHI Wather
It does Wash to 1 a D t

INVENTORS Laurn how to proved your INVENTORS Learn now to project voor invention. Unless the inventor is familiar with patent instant, he should engage a competent required parent after er or agent to represent him. We are read exed to practice before the U.S. Parent infine and prepared to serve you in hand to your patent metters. Patent Guide for your patent metters. pour patent metters. Patent Guide for the Inventor" consenting dermied have maken concerning parent protection and procedure with Reard of Inventor in the bear and ded to you upon require without to gain the control of the control

PATENT Searches 45.00 mc ud.by putent roplus Same retails one of as conducted a rips ent a less Pres plates
that are \$40 mrs are Part Serves
Justinale \$45 ft Pennsylvania Arenas
Washington 6. D C

INVENTORS FOR Copyright Design and Party Luide contact Henry Mery lerr at West 42 of Street New Y rk 16

INVENTORS I 1 to be see that you have all 1 m job vol to d d out he we protect a The 105 m M M r m therma Ar Das don. In man Ted to a to 11 p evenuary ste, a r you Se d ture a sequent for m and 1 are 1 m Rev d for N miles McM a n he can de purifice Recar e d for a Actor win a for a for a Recar e d for a formal a for a for a for a for a formal a for a formal a formal

PATENT Searches \$5.00. 46 Nour serv Record of Investing was a Michael Mast legs P O Box 1 4 Washington 4, D. C.

the An dear sed drawl, as and samples made and excel to a set the driver, with An er to Bar more, Margaret

FROM one inventor to Another Is your invention ready for market? Have licensed over 60 of my own hiventions to industry Why not let me he p you? Complete servtion Jacquelat Harvey Jr Corna og Kaneer Realty B de Washous a o D C

SEARCHES Put your patent searches in the hands of a Beaute of Fatent Actority or Agent as he qualifies to give a warthwhite patentability report Record of invention form upon request and information on patent protection. Patrick D. Beavers Regulered Palett Atturney 930 Cofumbian 3.dg Washington 1. D C

PHEE in a man on resed way to pre-pars protect and sell your c ventural O W Wood DO Church Street Liberts Corner New Jersey

INVENTIONS Sold Leaved Complete Bervices, M. Jorce Humphrice 1425 Landtatle. Philadelphia 16

SAVE money File for and obtain patents yourself Glen Lea Company, Box 164, Valley Stream, New York

PATENT Sourches 15 00 46-hour stresste ren in pritection to ma stee W e Pient Eng : estion to ma .ret W e Pa -ent Eng : estion Bervice Til 16th 8 .eet N.W. Washington 5 D.C.

OBTAIN patent yourse! Firm are at- tore of paterin up to 20° high. Only to ners fees left two lot \$2.00 States to \$1.00 Mas ereraft 1128, 7641 Olcott. Chitto or makey resurded D D deep 5645 cag. 2s sinois

L. b. Ast. N.E. Sca. 16 3 Was first.

DOWELS Supplies. List free. Queens

INTENTIONS IS ANTED

NVEN ONS wanted ha en ed in patmi ed Tremer dous Manufac avers inthe is on Marge g Service 1464 Mitchell Oaksand 1. Call

NYENTIONS promoted Patented or Unpatented, Established 1911, Write Adam Fisher Commany 183 Enright St Louis Mo

INVENTIONS Wanted Paten ed unpatented Send for free form "R God Af Adamse Patent Broker \$5 West \$7.61 & Y Competition.

NVENTORS Hundreds of manufacturers have requested our assistance in locating marketake new products. Complete

"NVEN" ONE Wanted Pater ed or Paters Pe d e 12 years experie ce l'is militie lo e time Katiotal Service Burgate (22) Me arrec St. Lauts 18 Mo.

CASH buyers for ideas and inventions. Write National Inventors Inventury 4007 East 131st St. Cleveland B. Oblo

INVENTORS don't sell your nor your patented or unpatented until you re a pour offer write Cowgill Box 208 Marian Ohio.

Will you sell your investion. For in-forms ion write Investion Mains Bery-ice by 1900 W. On aboma Cir. Ok a

INVENTIONS Wasted Pater ed Pe ding n y laten of Park Park | Extract P

MODELS MODEL SUPPLIES

with his distance on the sign of periods the distance of the sign of the distance of the dista Fastier 1903-2 Stowah Royal Oak Mich

test CAR Models 1/25 scale all metal chrome trim. Send for catalog Alex Toy Co Dept. Ps-12, 2627 W. Division St.

Ht. LD Historic ships, vehicles, soc to 19 09 kits. Illustrated Catalog for Ideal Moneis 18 West 18th Street New York 11

110 rach screen CF co many free " at the h 505 Fra a D Null PT 10 New New Arrang

£1VE Steam Engine 10 ; her reads to-run, 15 35 postpaid. Catalog ste Meric to meany 50 18 94 h S reet Zimiturat 19 New Y rt.

MENGATCHE for use hits Sold cherry East meet bed Large select to Cat 20c Culver M. satures 164 figt Mistars Fats New Lork Sept E.

SOMETH NO new Firs scente in det a d pa til h u te ph is mid destra-tion lide Richard Orr Ship Studio No.

STEAM engines botters, carrier Cata-log 25s. Anton Boheboy 2397 Frice Ran WILL IN

Strip Models Ltd Kits F gs Ft o St at Tur et Biesto Ens e C P 125 1911 Ca alog She Bus 151 Brookine 67

HOME CRAFTSMAN

LEATHER, tooks lacing, supplies, Free Catalog National Kandigraft. 199 Waltam

PRACTICAL Painting Wind Photoh ing" shows how to get professional results Pornica of 1 this wire, it professional results hong decorate Compete M der or anid spray methods. Tricks You've herer seen Write Rome Crastaman, 115-P Worth St. N Y 13

10 FULL aire Jig Saw patterns of beaup as "How Where to Sell " Only 21 00 Mastercraft 1148 7041 Olcott Chicago 21 112 FARE BY

LEATRIERC RAPT Metal Tooling Tex-tile Painting Beadcraft Shelteraft Many other crafts Send for Prec bis sent ed catalog today! Kit Kraft, Rollywood 45 Carl.

PLASTICS home-craft course for Men and Wimen Te and shows aw to make a direct of the se of play inspired als A pastice and ma eras a lex 21 process are ided in cooler. No special tools coded Course tools for se William or Free booklet. Interstate Training Service of Dept. D3-M Portland 13 Oregon

33 ORIGINAL Idea" Jig Saw parterns \$1.00 Professional drawing quality printing Full 1. c shelves toys ... and orramenta hoveltes Walker Bludio VII. 4341 Linded St Louis & Mo

BUY Showsaid nationally advertised power hand tools thousands other or discrete street Whitesand Plant American Surers, 846-IT Linden White was r Bollado 14 Res Tork

"TOPS" in everything for Linthercraft, Lones, orices Genaine 'Craftoot numps Causes for Crown Leather Company 23 to see 8 seet New York 18

20 ALL new full size lawn ornament and

DOWELS Supplies List free Queens Dowe : 340-37 Edgewood No-edgle 22 N Y

SIG Savings Leather Now for time you can buy ou sides of top grain coun de a our specia, ama a g y low a serv-to-you o ices For de a, a write Dept. C. W. D. Byroh & Sons. Wallamasert Md. Fine cownide tanners since 1812

25 LAMPS 10 K icknorks 30 Novel ica Full patterns Easily Built \$1 00 Asso-clated 103 McGraw Ithaca 3 New York

MAKE attenetive lamps and novelties Silver glass jugs and bottles inside. Ma-terial inexpensive—obtainable at Drug Stores. Formain and instructions \$1.00 Chas. Pane Box \$202 Cimarron Station. Oklahoma City Oklahoma

START Year Own he stness manufac-turing drifts and am a Kits 1"06 8. Patchett. 2187-N.W. 24 Court. Mismi

Ot H bigger Leather and Craft Catalog ver 1000's of frems. Send 25c (refurded with first order) Russo Randicraft Supplies Dept 211 MS 5. Spring Los Allar es Cala offia

FREE Catalog showing ready to assemble k.te ideal for Christman ritts. Venta M reas: Parts Bended Se to H I folds Baby Moccasies and Handbags fandy Louther Box 201-8. Tube, Octa-

TEA HERCRAFT Everything needed by her its ad acced hobbs as a nod a ofersu, es la U S M derate priced tousing were top quarty on tektha Laus sup-nies kits hend the for Big Cataing J C 1 and Co 820 S Tripp Dept 2654 and 24 T 2 as

LEADERSCHAPT Burnier Pre-rut bira-to- a e.c. is se stock Catalog De re-tunded Prat der W. Fran Haddle M.g. Co. 1725 Powers Bireet D-11 Chickmati 21 On

16 ALPRABET Patterns Monograms -Namera 6 h.gh Walker H. idio Ph. Al. 4161 Lindel. B. Louis I Masouri

101 FULL size patterns. Smart new g its ber der lawij Ogijres chelven fir tons w. on a alphabeta, Plus Make Marey La was g. O. 21 1, 00 Mastercials Half 641 Ocean Clueng, 31 Hannala

FARSCREWBACKS Pinhacks 25c c sea \$2.00 Deskpens \$1.20 Com s-po tan Melastrafters, But 156-PB New Y rk 8

LEATHFRURAPT New Stylectaft fo Ger Fire New Kits dissertated in harer He to H ... do Firmes etc Bend like new en a-Retunded first order. Apathe Leather 2604 East Washington St. Phornik S STILL

-QUARTENUTIFES Make be'to handters a ards flog leastes etc Special et Best er a book ca a er aud que y ce d'aur es list P C Herwig . Dept l'es 121 Sands St. Brooklyn 1 New York

50 TOYS. Pull rise patterns Early Built. All age groups. 81 00 Associated 103 McGraw Ithaca I New York

SUPERB Profitable Jiman Pater a Folder , anda Piana 2233A No. 25 h Maj-waukee d. Wasconer

KNOCKDOWN Cedar Chest Lumber and Veneera Free Price List. Gl ea Co. Brownsburg Alabama

cassing of materials tools, kiss, for Art a Lauther 412 Joseph Ave. Rochester 5 N Y

Amateurs. OL NWAKERS sinca : " r. me Europeaz wood Ma e flast. Supplies, look patterns it sac tions. Dinstrated estalogue 10c refundable Premier Violin Supplies, Dept. VPR

BLEACH turniture blood. Kit it complete with prestruct to Send for ree bushed National Chemica's Dept 2/1 160, Ba bridge Ave New York 6, N Y

A Selection of the mail un que and farcinating dix taw pa r is in they makers at 00 H. S ger 2126 N F Street E. would I die .

WOODWORKERS he p make and sell bear us new Foto Stieff Fast on let 25 10 profits Brackets drawners no pan 52 00 W E Parker 244 Reo Warren O

100 PULL size Jig saw patterns, up to 20° high only 51 00. Pattern Service Medway 8. Mass

KNOCKDOWN cedar chest and lumber free p ce ist Bed d Lumber Company Sar o s le 1en leaner

WE Supply Ready Markets For Your Hand, etc. a. B.g. niormation tolio and complete details—25c. Home Arts & Crasts, 310 Devidson Rd. Westley, Wisc.

Cherry Oak Cotar List fron Haynes Co., But 131 Shethywale Tempessee

BIG full size patterns of Banta sieigh and reindeer for roof or lawn, Gamplete directions for making pointing and light-ing. \$100, Mastereraft 1168, 7641 Olcott. Chicago 31. Illinois

LAMP size typress knee \$1.00. Cy Products. Dept 5, Laisrette, La. MILLED BY ROUNDERS

SEND for big new 1953 illustrated calalog that will show you how to turn your space time into cash-making quick-selling highly profitable lamps, Every home a prospect. Hundreds doing it you can too No experience or special tools required. Catalog No ? contains 56 pages filled with shades shade frames figurines and bases

amp conser our horing compound and do ette of tim ar itema A so a a hi do of of mind educat print parts excit the or reed it sould be part section of the first to be easily for the parts of the first to be easily for the first to be easily for the first to be a te a g will wro male price to 500 Atl 38 8. Despuiser Chicago

BUILD Your Own "Tractor". Free infor-5 race D & Campions are Call

CLOTHES Dryer-Rotary Drum Cat: san Techniciali. F. O. Box 646, Phoenix.

Dil Soir Own Cersmit Tue line latters Inexpensively — Detailed Instructions \$1.00—Tile and Material Sold I to 1 to that 1925 Peach Avecus, El Cajon, Calif

BUILD three bedroom rancher-large while Box 52 Plushing New York

BUILD a treasure and sastal detector shive icht Benaitive Inexpensive Compete kins Pres Literature Dept. H. Elestronic Applications, Bez 6075, Washington S. D.C.

BUILD Streamlined plywood kitchen cabinets. Plans, photos, instructions 50c. Playmechinets. 4617 Johnson, Western Pluge Inde

torners a Block Nomes 32 page booklet on how to build, \$1.00 H C I and led Civi. Engineer Richton Pens.

comments in the brush have \$ 50 Tarkpater \$1.00 Post heer even hand he uded P constructure Larger models. hasyplater But. 26. PM4 Red Lain Penna

bull a) success and mass at home we sell your product. No special tools or regipment needed Pros details Casseratt. son CW Surget Evel Los A gove 12

BLILD income duples \$1 and Concrete bluck visel ward we copyrighted feeligh. He reprint hastructions Material cost List at my Me an But det 2 à Presenté l'1 e Building Extre Rock Arbanan.

MAKE their acts New Orleans type porch rates of and columns unter our branchill a upe act to and other designs. Cutainer and tratitio ions \$1.00 perunded first order W by 5 Art in Iran Dept & Laurel Mission pl

WHY pay real money for Pire Extinmushers when you can have fun making your own very reasonable. He glabors will hop when they see yours. Complete the struct as \$1.00 F a paid for startion manuscreed H bits 50 p 1945 R E Ladd 410 F c and 16 Oregon

CHANDER CHES Ches shorter of a una Married Miles 16

OF DECOME DESCRIPTION. WATEREN, BYL

RHINFRIONES Jenny pritings cam-cus sequis beads Soul for for Loui-trated Carlon J & M Novelties. Dept. CM 4 G Th Indiana

JEWILRY making, Sand See for nicetrited catalog M ady-Pate Co OPO

10 Milble grade Bulle Ladies gents Wilston chro needing Midde relate pts 00 Catalog 10c Berkebild 1100 Castilehal New York #1

KLONDIKE - Jewelry Findings swept from manuscraters tables I maked and suffinished parts for engrings, hencelets neck new plus, etc. Sample pound \$2. 5 ps., dr \$1 50 Stones for title sene to 1000 65 aumple 100 61 16 Carre Pra 36 a sorted t es \$7 to ch & cha & 0 Brads impresed appearment. \$1.50 teaming price d. imperied appetrient \$1.30 tablis pro 6. \$ peo de 96 No COD e Battischere (han a teed. Mercharden Der teiting 4.0 ,5 Z 16th Bt. N. Y. Depo Z 52 H's March Cash Paid Por O'd Gold Briten Jewy Could Teeth Watches Dismoida & terrary Descriptor Painternal Control Contr

Fine information Batis action Guat-Hame Severing Company 28-T East Madason, Chicago,

make yourself Mousestones, Pins. Baretrgs etc Lowes Prices Guaranteed, In-Structions and Calaing 10c Sarry a 146 Archey Co. t Ness & New Jersey

BFI Rb nestone Jewe'ry Ruge profits. Co agegre piets, say he ideeds of it) in Mc Bergen Arts, 126 Main Hackbronch H J

IWO her Bots show how to make jewelry at home and how to sell what you make. Send 25c for "Bow To Make Con-tome Jeweiry" and "A Success Plan For You Ca cute Dept MJ 102, plock It can

JEWELRS IN H Shrists Emported Reise es Pres Calaine Services House to place to processor N m Y ... & TORKER O & PIPES

180 5° CORONA Cigars \$4.75 Ideal 1932 Nebruska, Tampa 3 Plorida

FOR THE MOME

CHAIRS Stoots. Codar Wardrobes Chesta Jurenile Purniture Cherry Tables, factory to sou. Disastrated price list free S-u ero Cr. Barres Court a Te n

NANG your present outside storm winde un un thora tadders Facy hafe liner se-con 62 00. C. J. Carter Box 143, Missi-la d Prints

VACRACK solves tank early m clearer Prince or Senie Variate Products, Bon 24th Cieve and 27 O .

CIRRECTIS and charles outdoor trade of the and dead of the per of the and the period treatment of the period of the and the company treatment of the company of the period of the company H + m 34 M +++

POAM Rubber Furniture Cashions-Pactory Seconds-16th discount, Prices From Ferma-Poam, 148-A Main Street, East Orange, New Jersey

KURRY or a just are needs thermostat doulen. Insta ' you se l' Part inte requier socket Saren I et prierts futrace. Pres I erat e Linn Products \$16 Karch-

OF INTEREST TO WOME

DRINERS See shore 30c men a sulta. 94 85 rousers \$3.26 Better used rivin in Fice cat Transworld, 184-F Christopher Brooklyn 12 N Y

NYLONS Se pair, Anklets 13c pair Socks Sc Print 17c Panties 13c, Dresses 6) 96 Slipe 47c. Undershirts 17c. Rugs 75c. Robes \$1 45. Spreads \$2 46. \$76.00 Wetchen \$18.95 Jewelry Sets \$1.25 Pens Sc. Combs in Aspirin \$1.00—1.000 Brushes Sc Rai v Nudes 5 in Kee est Russen \$2.70 C moles Stack List Pic ure Cala-

house the it sent immodiately flabore a

GOOD Money In Weaving, Weave rage nt home for neighbors on \$60.50 Union Last Thousands doing H Pass of fire Union Laster 154 Post St. Best ville N T

LADDER Barests Your Musband a Shave ing Printerin Porever Bour Rayors 32" na odier seed to Life and Look Magneting White I could bury are last A 617 to estude for 615 to Free use at a 1 metuded bend many order nets E P unity 17630 Lamburg Piece Van Nuve Cu stockte

WOMEN make money of home spare time hew reads out Rep & Roand Fary profitable R. Swood Manufacturing Com-pany, Dept. BB. Hollywood 66, California.

IT R a pulse E i a shopping bug! Ata in one! Will Raise dis 6: 1 2 Company But 2664 Bugh Bend Judaca in one:

ADDRESS adverting proteurds Must have seed handwitting Lindo Watertown, Make

LADIES outh extre cash by address no

WHY pay retail prices! Oet curaled showing Martin aty Advertised mercian-dase at discuss to 25c is ad Burgos Culbert, 65 618 St. Paul Street, Martimore Marriar d

DU AL Home Entirely new product extrematy the hard and sha p lut doublepterd in at builded pother to 1996 surelead instrume to take ett Ein neten e op-W I give more more smooth shaves D 6.8 bade han ever had bet re Par out performs an binde sha peners tested. Will last Years, Price \$1.00 postage pa d De Naprus Comporation But \$2.2 Philadelphia b Pa

"CHRISTMAS Special" Beautiful Large Pearl Handle Continental Pisto Lighter 51 70, pocket size \$2.00, postpard, Quality Sart But 27 a Actes of No. 5 Car. 14

FREE Presto fire extinguisher given with each Dormeyer Mix Maid mixer compiete with two bowis and juteer \$29.05 Taylor \$20 Nim.tz. Des Plaines. Illinois HEARING Aid Entteries. Lowest Prices.

Bills. Box 51 York Pa BIG discounts on branded quality mer-chandise order now for Xmas. Free curatogue, Ascot Sales, 45-34R 218 Street, Baysade Men York

Roomed High Mark of Things I be RARE specialty devices estatog. Unusual pots,bid.jes General Store Tazewell, Va.

SCRAP Mercury (Quickstiver) con-tainers supplied. Tantajum—Bonnuth— Tungsten, Metallurgical Products Co.— Extablished 1900, 35th & Moore Streets, Philadelphia 46, Pa.

SAW Filer and Orinder Box 574, Pearl River, New York WITCHING AFFARET

SMART Crochet-Krit Ties a pre-ula Derfer's 2705 Summat Con Con J

\$22.50 ELECTRIC Shavers-\$13.56 (50 Day Proc Trial) Write Esquire Co. Box 66 Mill Valley, California.

XMAS special free ball pen 100 double edge razor blades \$1.00 Payne. 5420 5th Avenue. Los Angeles 43 Capil.

TATIOOING Course and Supply Bro-ciners 2st Zem School, 726 Lesiey it word

DEANING OF PRIZES PULLEMENT

DRAW Hear Mul human figures, 147 pictures, 20 lessons, 61 00 numplets, A'd-crofit Studios, 1306 Maple, Los Angeles 15. California.

THEATTRE Sunters THEATTHE Monters New 1) part of teatherweight Model 101 locator for good mileur and minerals. Money-back guarantee best available. Also Geiger Counters for gramum prospertion (a pete p. mation free, The Goldak Company 500 W Company 500 W Company 8 vd.. Glendare 1 cari New 13 pers di

SELECTIVE metal and mt c'al detector Re statio ary date. Dir cgun im Grat D Silver, Metal Detectors Origer Counters for Urantum, Mineralights. Sen-

to a real new facty gustanteed modern. None Pitter Information Free Detects in Co. 5430 Vinctand Ave. North Equipment

1 HEART RE M. Brope Couper Country - Mr aral Lice of Why buy compthing thirster when you can buy the best at a soner price Backed by years of experience Face Face Funtamented by inclory Detects m drain me all gold silver, coins, Pay-I cwance Free to page illustrated book et. Finan Breen in Lab , Inc. Palo Alto Culif

LOCATE Ridden trensure dispersion mile ale from metale with Model 100 Detector Waight 5 pounds in small mean in Pac 179 and provide in small mean in the life in

WATCH a. 4 clock resuting books for historia a Provide resulting North American Dept. 23-L, 2420 M. Milwacken, Chieago 47 litinots

WATCHMAKERS' Journal for watch-makers, students, hobbytsts, \$100 year Sample popy 20s, Box 3318, Daytona Beach, Fiorida.

be Micell grade Swing Ladies and Dental We saw accion needing transcript pa & \$15.00 Write for prices B. Lane. Houself of the St. Louis Min.

WATTHMAKERS - Jewsters complete informative on source 20c Brugal Com-

WATCHMAKERS Beginners! Watches Measure a Descriptive and Bus 156.

GET Tour Pamily Creat! Send \$2 to for Pattern and Color Description, Use design for Bookplates, Woodcraft, Needinpoint for Bookplates, Wooderaft, Nordispoint or Color and Frame it, Ouldax, 5 Built Head Status Ric cater is New York.

BUY Wholesale thousands nationally advertised prod ris at his discussiv. From Wisconsiv. Flan. American Dispers. Witoireair Flan American Be

W 1616 Clothes below wholesals cost era e \$1.60 and about coats \$1.50 All co has recordationed after red. We will also as swhere t O.D. We a Eastern Process by Lo. Box C. Franklin Station. Na anc e 75 Mary and

PREE Fair plo? We to a Errent French. true per mes Wh sende o pt E pete-n part Lin. ed ecid B Hellywood Bord. H. ywood of Castornia

STE 18 Et. Gold Plated Disper Pine 81 80 Thurston, 43 Piret 84. Johnson City N. Y Guarantees.

MAGNETS—Permanent Alnico, Mever Inses magnetism, Excellent for map and bulletin board work, Many uses, 12 for \$1 00. Pritt Co., Dept. MS-11, 12 West 27th, N Y C

ARTIFICIAL Human Eyes—Assortment mailed you from world a largest finest aclection imported glass and ali-plastic unbreakable eyes. Write for free booklet and color chart Eliablished 1904 Denver Optic Company 1914 University Bidg. Denver 2, Colorado

WHOLESALE Aluminum Venetian Blinds. Prices on Request Delta Distributors. Moreauville Louisiana

EUROPEAN Trip 1963—20 unusual exciting anapehots of Paris, London, Italy Oermany \$3.85, Mark, \$300 Talbott, Hew Gardens, N. Y.

SENSATIONAL new Sand Ease sanding blocks for removing old finishes and preparing new wood amouths planter Paster and more economical than sandpaper Five sarge 2'13'15'2' blocks Postpaid \$1.00 J C Ivey Company Dept. 5. 414 Main Street Cincinnati 2 Ohio

RECEIVE magazines, samples, catalogues, Mails from averywhere. Offers hundreds. Larger listing 35c. Borick, Bos. 86M Cincinnati 26 Ohio.

BIG interesting mails three months 15c year \$1 00. Harvey Teeple, Decator, Ind. *

3 NECKTIES \$2.35 100 Bindes \$1.00. Box \$70K Milwaukee Winconsin

300 BIO Ma is guaranteed samples, offers o and propositions 12 months inting \$1.00 cretureable Wright Publications 2276 Hubbard Memphis I Tean

ADDRESS advertising posteards. Must have good handwriting Lindo. Weisrtown Mass.

EABILY bome made windmill gives plenty power Guaranteed instructions \$1 Ziemban, 6121 Orchard, Dearborn, Mich.

AtR-Wash Amazing new odorless household desdorant bantabas most objectionable odors. 12 os. bottle concentrate with sprayer makes 1 gallon. Send \$1 00. Box 1100 New Orleans 4 Louistana

CRIARETTES—Roll 200 mid tanty quaranteed to please for 756. Details free Pere Maherly Box 858. Owenshore Ky

KILL Boaches-professional matractions 500. Bendal 80 Nurson Patisburgh Penna

YOUR Leather Jacket renovated expertly Free circular Berlew Mig Co., Dept 7 Freeport N Y STOP paying Real Estate Commissions. Information brochures 'Buy'- Sell' \$1 00 rath Both \$1.75 Burnley 1425 Bay Alameda Cahi

0 PERSONAL

DETECTIVE'S Opportunities Delective particulars free Wille Wagoner P-125 West \$8th, New York 24

HOW Can I Find Out" You Can! Information confidentially developed. Any mut of person problem World wide Of ficially licensed Established 1927 William Herman 170 Broadway. New York

MEXICAN legal matters, A. Espejo, Box 217 Tijuana, Mexico, Use air mail

INCREDIBLE: Become Mental Superman Overnight' Free Bucklet' Bilod, Bux 1727-VB Hollywood 28 California

AT Last! A budget that really works! Make your dollars to farther. Send today for printed expense control budget with comp etc instructions, Only \$1 postpaid Ludecke Box 15 South Clate. California

SUCCEED: Use Psychology! Pree: Complete Outline! Box 8021-C. Hollywood 46. Cadiorus.

TROUBLED- Write Madem Lyde Advice in personal problems Confidential reply 61 00 Box 2714. Asheville N.C.

RASY for anyons to be Successful Happy Prosperous Get results Sookiet 50c Adams Associates Newman, Illipols

LETTERS Remailed 25c each. Six glossy Kodarhrome Sceniu postcards \$100 Remailed Free Robert Dys. Box 781 Indianapolis. Indiana.

CHRISTMAS Tree City" remails 25c. J Rogers, Box 512. Sanger, Calliornia

LAND Of The Sky" Letters remailed (25e) "Smokey Mountain" acents folders (61 00) Wyatt Box 2374 Asheribe N C RESTORE Oray Paded Bair to pleasing brown color with marvelous Hair Rejuvenator Remove Dandruff Hohy Scaip Stop Palling Hair in days Only two harmiess ingredients. Main ingredient formula and directions \$3.00 Postpaid, Money-back quarantes. Particulars free. P O. Box 525 A National City Calif

HAND Guide Corrects your Penmanahip in 18 hours Write Perfect Penmanahip Box 665-25P St. Louis, Missouri.

1 ETTERS remailed (rots Germany England, Luxembourg, or Switzerland \$1 00 Dunald Johnston, 211 Monroe Norfolk, Nebratka.

MEW York Remails Mc. Gerald Pinsky. 1401 Eastern Parkway Brooklyn. N Y MIAMI Minim Beach Remails 25c Arthur Warner 101 NW 50th St. Minimi Fin.

INTERESTING Mails ' 25c keeps your mail box lull three months Bents Desk-1 60 Chatawa Mastasippi

REMAILS from Louisianus Capitol 25e each 6 51 00 Picou. Box 2134 Baton Rough Louisiana

LETTERS Remailed promptly, 25c. Dietz 156 East 152nd Street New York City 20

LETTERS remailed from Los Angeles or Long Beach 25c R. Harrison, 14913 Sc. Wanette Beilflower Calif

LETTERS remailed San Francisco Postmark 25c Private receiving-lorwarding address available Shanks Box 3110. San Prancisco 18 Cattlornia

LETTERS remarked from Columbia \$1.00. Lett Apartada Aeren \$100 Medeilin. Columbia

LETTERS real real residence and the second section of the second section and s

HATE Shaving? Incredible scientific discovery makes every abave a miracle! Guaranteed authentic and workable. For lifetime treat send \$1.00 for 'Secret of Shaving the Scientific Way." Institute of Punctional Research. Box 4866, Washington 8, D C

PICTURE Post Cards made from your photograph 1900 \$11 00 Raum a 4154 Fifth Street Philadelphia 40

ADDRESS advertising postoneds Must have good handwriting Lindo Waterlown. Mass

NEW York remails Letters 25c, Airmail 50c prompt confidential. Bux 601 Grand Central Station, New York 17.

MEXICAN Law Contern Practice Attorney 1263 Arisona Street, El Paso, Texas CO-ORDIPATHIC Drugless Service Taught by mail diploma awarded, Prof. Caldwell Box 6123, Phoenix, Arisons,

X HAY Mind " Dangerous power over others Inquire. Send dime. Krishnar Institute 1913 Lincoln-Park-West 221-62. Chicago 14

SEABON & Orestings remailed from Mollywood Dec. ist 25th 25c such, 5 - 30c. Also Los Angeles Classified section mailed complete 50c Carson, 1801 Rodney Dr., Los Angeles 27, Calif



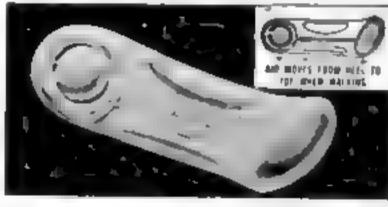
t minimize Specie. I are now the I reported a Change, Manual Content. Now State, for I simple to Lette but appears not the late for it into form I length ground and per second policy of the property of the

BUSSE SALES CO., Hartford, Conc., Dept PS-14



Snap-In Swivel Washers and Faucet Seats save you annually from \$75 to \$100 per hot water faucet. Stop leaks and last 10 to 20 times langer. Ordinary Washers wear out through rotation under pressure. It's a waste of time and money to replace the Washer and not the seat Kit containing Seat, Washer, insert Tool and Gauge available through your local hardware dealer.

SNAP PRODUCTS CORPORATION
3613 SO, JASPER PLACE CHICAGO P. ILLINOIS



WALK ON AIR-For quick zelief from callines, blisters, spur or bruised beels, general foot (stigue, place Albin Air Cush'n Innersoles in your shies. Air moves thru small channel, gently massaging feet. Odorless, non absorbent almost weightless. Order by men's or women's slice size. \$2.95 a pair. Yo COD's, please. Money back if not delighted. Send for free 61 page gift catalog. Albin of California, Low 1011, 1101-99. W. Bih St., Los Angeles 17, Calif.



HANG WALLPAPER

the professional way

You can hang paper better and more easily with Adhesium — used by professionals for over 50 years. Added to paste, Adhesium makes paper stick tighter — helps prevent cracking and opening at seams, I sed as a sixing, it prepares wall surfaces so paper slides into place smoothly, patterns can be matched easily . . . At paint, hardware and wallpaper stores.

Write for informative leaflet

ADHESIUM®

Colomial Works, 228 Horman Ave., Brooklys 22, S T.



AMAZING POCKET



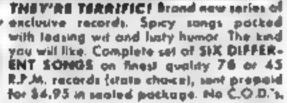
Raully Works-Charles a Pack of Cigarottas?

PIES IN ANY COCKET OR PURSE GET

LOCAL RAPIO STATIONS WITH CLEAN HILL THE TOSE NO STATE OF STREET AND A SEPTEMBER OF COMPATE CATED SPRINGERS NO ACCUMENT NAME OF SOME OF THE PARTY ing to war of the partie of the file of an article Like and the grade of the file of the set of the

COUNTY OF THE READY TO LISTEN MIDWAY CO. Bent PP\$-11, Reartey Nobe

ADULTS ONLY



MATIONAL, Dept. 476. Bex 5, Sta. E, TOLEDO 9, ONIO



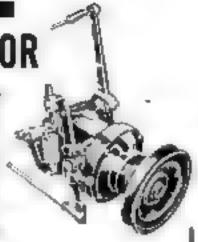
Before you choose, be sive to GET FACTS obout Schult mobile homes. Write or wire Dept. 3111



Delta POWER-KING ELECTRIC

this ONE GOVERNOR

popular farm & industrial gasoline engines



PIERCE LONG RANGE

Universal Governor

 Instant variable speed selection and accurate engine control at any speed setting within 1200 to 2600 RPM. Higher and lower ranges obtainable by simple change of pulley. Also constant speed operation.

 Accurate dependable speed control for angines operating coin thellers, drag lines, hoists, are welders frocks and fractors with power take-offs, etc.

Write for Complete Information

DEALERSHIPS

AVAILABLE

** Weekf's Most Esperienced Geretner ONLY

Pulley extra

Send Check or Money Order. State Make, Model of engine.

THE PIERCE GOVERNOR CO., Inc.

1654 Ohio Avenue, Box 1000 Anderson, Indiana, U. S. A.

ASSEMBLE YOUR OWN BOAT!

Full-color catalog shows easy-toassemble boats from 8' to 18', many styles. Send 25¢ today! Roberts Industries, Inc., 4170 N. Main St., Branford, Conn. In Canada: Roberts-Ross Industries, Ltd., Orillia, Ontario, Can.



Catalog 25¢

Invisible Gloves Protect Against Grease, Grime, Paint

Just rub on Du Pont PRO-TEK hand aream before you start dirty jobs. You'll be wearing invisible gloves. When the job is done, washoffthe PRO-TEK. Dirt, grease, paint wash off with it! Leaves hands soft,



stain-free. Get PRO-TEK for about 49¢ et drug, hardware, auta supply stores.

DU PONT PRO-TEK



Better Things for Better Living ... through Chemistry







A sure, easy way to save fuel! Just drop a Handicalk cartridge into the gun, press the trigger...add comfort to your home. Write for leaflet.





Imagine beautiful Catiferia. Exquisite Combidiquia, and other cotorful verseises, growing, blooming, right to your own living room! A single Orched plant on a curd cable or window sell, can multiply anto a fortune! NO EXPENSIVE EQUIPMENT MEDICAL GROWS III ANT CLIMATET Learn the amening secrets, with employ-follow instructions. WRITE TORAY FOR FIELD ILLUSTRATIONS and details on obtaining already posted ORCHIO PLANTS FREE!

O R C H I D - L A H D

DEPT 28, BOX 27801, LOS ANGELES 27, CALIFORNIA

1964 CATALOG - Send 25c

41 models for 1841 See World's finest line before you buy Rated tops in design, styling performance by the experts. 'SA Catalog plus booklet' 'Bost Selection, Operation, Mointenance'' \$1.00

Custom Craft THE ORIGINAL PACKAGES* BOAT KITS

BOAT PLANS V AND FULL-SIZE: PATTERNS Over 100 Modern plans and full fixe potterns. Recing classes, cruisers, inboards, outboards spil boats. By famous designers, 6 to 30', DESIGN CATALOG only 35s. For Design Catolog plus boot building handbook send \$100.

CUSTOM-CRAFT (DEPT. 8) BUFFALO 7, N. Y.

COLOR PRINTS From Your Transparencies

Electronically controlled for superb results. Rapid service and satisfaction guaranteed Prints from | ANSCO COLOR any size | KODACHROME transparency | EKTACHROME

50: \$1 \$2

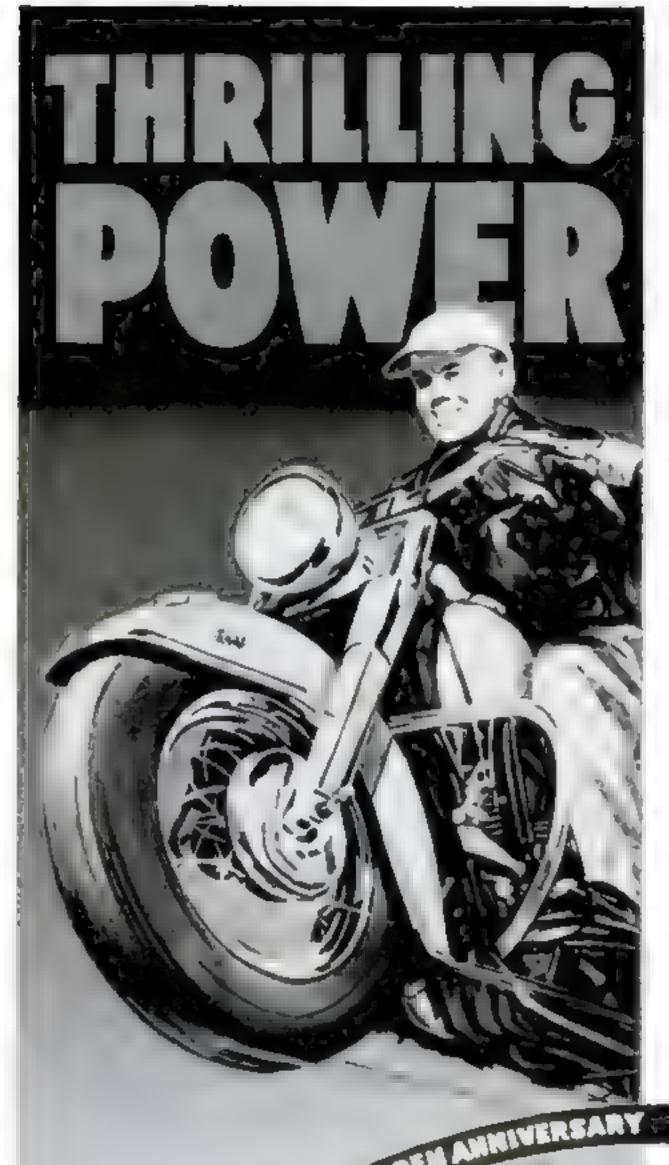
PROCESSING: ANSCO & EKTACHROME 24 hours — Roll Film 120-620, 35 mm, 20 mm mml. . . . Only \$1.00 roll

COLORFAX LABORATORIES



Min. order \$1. No G.D.S.'s

DEPT 3-113 BOX 3521 Computers Sta, Wast, 7, D.C.



PUTS YOU MILES AHEAD IN FUN

As powerful as it looks . . . more comfortable to ride than anything in its field. The "Golden Anniversary 74 OHV" is truly the undisputed ruler of highways and byways. No other two wheeler offers so much pleasure and safety It's the one motorcycle every rider wants to own See it! Thrill to a test ride at your dealer's today. Ask about his easy payment plans. For your copy of the action-packed EN-THUSIAST Magazine and illustrated laterature, send 10¢ to Harley-Davidson Motor Company, Department PS, Milwaukee 1, Wisconsin.

LARLEY-DAYIDSONI HYDRA-GLIDE The New Model 640

LECTRONIC NALYZER

PROVIDES ALL THE MEASURING SERVICES RE-QUIRED FOR MAIN-TENANCE, DEVEL-OPMENT, TESTING AND REPAIRS OF ALL ELECTRICAL

actual consumption white unit under test is in operation

and without breaking any connections. 6 Managres surrents up to 75 amperes.

Specifications. A. C. VOLTAGES; 0-15 Volts, 0-150 Volts, 0-750 Volts, 0-7 0.75 emperes.

Model 640 comes complete with following items not shown: Portable cover both City and Prod test leads, dual purpose line cord, plastic case of for accessories Asso included is a preculon engineered External Shunt for high current measurements.

Interest or carrying charges added, Simply remit \$8.75 with order, pay balance \$8.00 per month for 5 months, MOSS ELECTRONIC DIST. CO., INC.

38 Mutray St. New York 7, N. Y. Dept. 8-84



HAIRVAC

New Massage Instrument Keeps Hair, Scalp, Clean and Healthy

Hemover the excessing dist and chardred ... promotes but beath we care to a manage of the control of the contro

Hand size eggs o see wave send as hinne of astay. Wheoverful my h I wave on reso to ever a sare No water adapt of a noticing to duit the out of the out after A ready to one as thousands of business to a sare a same a topic of the out of the out of the out of the outer and the outer of the ou

NUGN PAULK

304 Kansas Ave .

Dept. II-35

Tepcha, Kansas



MIDWEST SUPPLY FIRMS Terrific values you've got to use to believel

Minds to sell for 2.88! New Only

What a burn 4 for the orice of one! These which, though used, are washed, sterilized and ready for long, lough waar. In blue or tan. Soud same, address, sock size.

PANTS to match

Sold for 3.95 now only Commission Mirgaina! Soud was measure and inside log length.

COVERALLS weer em used and save plenty! Originally 5.95. Now only Soud cheet managrament,

SATISFACTION QUARANTEED! Money back if you're not convinced these are bargains you can't best! You can't love so order TODAY for immediate delivery! Pay postman or send money with your order and nave postage,

> GALCO SALES CO. Dept. 241 Claveland S. Ohio 4064 Sunt 71st Street 9

RIFLE BARGAIN

CARBINE STYLE IGRAND NEWL) 34 Inches long

Continued to the part of the section UNITED THE SETTING 4 May 3 at Transportation of the COD's trainer to the request. UNITED ARMS CO. United Building, 9043 S. Western Ave., Copi. HOS.1858, Chicago 20. We that a large law base sold to manufact STATE AGE.



12 FOOT BOAT KIT

F.O.B. DEFIANCE, OHIO

The season's best boat hit buy! Pre-assembled frames, all parts cut to size and shape for speedy assembly. Write today for FREE brochure.

PENNEY WOODCRAFT INDUSTRIES 208 Perry St., Dept. P11 Defiance, Ohio

Protect your home against power interruptions. with an ...



Provides dependable standby electricity for heating system, pumps, freezer, lights. appliances. Keeps home safe. liveble. Automotic start and MOD. Find out bow little it costs!

and per trader!

1 000 to 50 000 wells Compact, quet running. eggy to install. Gasaline engine pawered

A SIZE FOR EVERY NEED

D. W. ONAN SONS, INC.





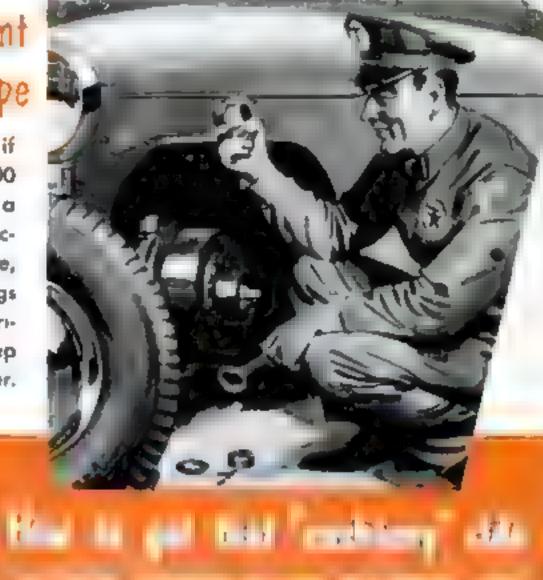


Texaco Tips

on car care

How to help keep front wheel bearings in top shape

Front wheel bearings may burn out if they're not lubricated every 10,000 miles. See your Texaca Dealer for a front wheel bearing check-up. If necessary, he will remove the old grease, clean the grime out of the bearings and apply heavy duty Morfok lubricant. It's care like this that helps keep your motoring trouble-free—and sofer.



THAT "CUSHIONY" FEELING





THE TEXAS COMPANY
TEXACO DEALERS

in all 48 states

Texaco Products are also distributed in Canada and in Latin America

BEST SHOTGUN BUY!



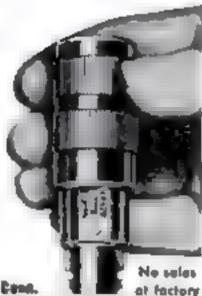
Any choke desired, instantly, by a twist of the fingers. All settings positive and clearly visual. 3 gauges to choose from new 410 ga. Model 183K only \$28.95-20 ga. Model 185K only \$29.95-16 ga. Model 190 only \$31.95-all including choke. All models \$1

higher west of Rockies.



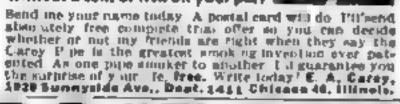
YOUR DEALER INVITES YOU TO SEE THESE ... Sand for FREE catalog.

30611 St. John St., Herr Haven S, Cond.



WILL YOU SMOKE MY **NEW KIND OF PIPE** 30 DAYS AT MY RISK?

All I want is your name—se I can tail you why!'ll sand you my pipe without a cont of risk on your part



Assemble Yourself...Have Fun... Save 34

Get a kit designed by builders of famous Speedliners and save about 16. Easy to-follow illustrated instructions. No special tools needed. Boat building expensace not necessary. Transom & frames furnished completeby assembled, other parts carefully out to size. Screws and give furnished. Only finest materials -- Philippine mahogeny lumber and finest hoat grade fir plywood furnished. See your local

built boats and boat hits Or ... WRITE FOR CATALOG TODAY! GENERAL MARINE CO.

Speedliner dealer for ready-

Dept. 604 6th & Oak St. St. Jessph, Me.

KB-12 Standard, 12 Ft. 51 * Beam 21 " Front Buch, 3 Souts. Daily \$118 00

ALC: U.S.

AD-12 Dehmar. 12 Ft. SI* Baem, &" Center Duch. 43" Frant Buch. 2 Seats. Body \$138.

KR-14 Standard, 14 Ft. 58" Busse, 24" Front Buck, 3 Santy, Duly \$149 DB

103-14 October 14 Ft. St." Seam, 21" Center Dock, 43" Front Dock 2 Santy, Only \$162. KB-17 The ount inestitut out-

beant-grouper effect | }7 Ft, ---6 ft Beam Over 25 MPH with 25 HP Engine, Sloops 2, Weight with colors border 600 lb. 2 People can layrich. Without cabin \$354 00 with cabin \$495,00. Buck hat \$40 Extra.





GIANT BALLOONS

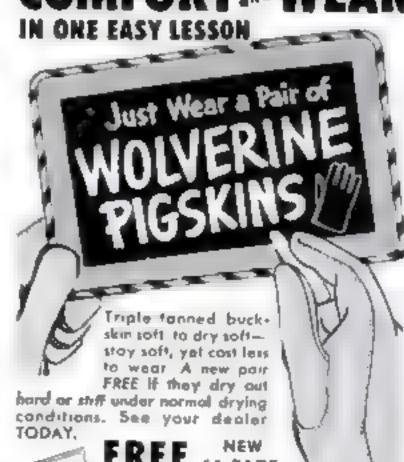
Surplus U.S. Gost New (Nerske) New Oversige) he fachs of propit. Great speet by he fachs of or for passes pleases, dames its. MONEY-MARKER, to these had side to intract countries to extend to exhibit only at our fact the exhibit only at our out out out to the end of our countries. At which men of earlier PROMS, his which are the tipe to the property of the Parties property of no prepaid makes

1 N. dia. 49c-i (I. dia. 99c 13 ft. dia. \$1.59-20 ft. dia. \$1.95

Cafel confidents please add rates tax

WAR ASSETS DIV. VOLUME SALES CO. Dept. 9-11-53. 3939 Souset Bled., Las Angeles 29, Calif.

HOW TO HAVE EXTRA WORK GLOVE FORT: WEAR



64-PAGE HANDYMAN'S BOOK

Weiverine Shee & Tanning Corp., Rockford, Mich.

Big-brilliantly illustrated! Contains 212 tested kinks and hints for home, shop, hobby and car. Over 200 photos and drawings. Write for your FREE copy today. No cost or obligation. A postcard will do. Dept: KJ11

Your Ford won't feel the winter



...if you use parts that are made right for Fords

GENUIN

Available at all Ford

Dealers and the selected independent garages where you

see this Genume Ford Parts sign.

When you get your Ford ready for winter... if replacements will add to its zip... insist on Genuine Ford Parts like the three at the left. Here's why they make a big difference:

Ford Botteries are tested to go at 20 below . . . shake-tested, impact-tested for durability and cycled from charge to discharge hundreds of times for long life. Testing batteries before approval for manufacture is assurance that your Ford is always ready to go!

Ford Oil Filter Cartridges are Track Tested for thousands of miles. Both full-flow and by-pass filters remove contaminants dependably, efficiently without removing useful oil additives!

Ford Spark Plugs are made to exact Ford specifications. They're balanced to your Ford's ignition system to give smooth engine performance and high gasoline mileage!

KEEP YOUR FORD ALL FORD

Amazing New Hair-Grooming Discovery!





1954 Chrysler's 235 Horsepower Makes It

America's Most Powerful Car

Its ability to spurt in cruising ranges pulls Wilbur Shaw out of a tight spot during preview run on lake highway.

By Wilbur Shaw

THREE years ago Chrysler brought out a sensational 180-horsepower hemispherical-head engine. All through 1952 and 1953, while other companies were boosting norsepowers, Chrysler coasted along on the same rating.

Now I've got news for you. For 1954 Chrysler is shooting up to a whopping 235 horsepower. That's exactly 100 hp. more than it had a mere four years ago. Announced last month, this car once again becomes the most powerful mass-

production automobile in the world.

I paid a visit to the company's factory in Detroit tongue-in-cheek. These everincreasing horsepowers, against a backdrop of ever-increasing accidents, have bothered me. Is there a good reason for so much moxie in a passenger car?

On a winding shore road by Michigan's Lake St. Clair I experienced one reason for it, and I'm going to pass it along to you. Then you can decide for yourself.

Chrysler's decision to advance its horsepower rating was purely arbitrary. The V-8 engine itself—described in some



quarters back in 1951 as the biggest improvement in design in a quarter of a century—is capable of a lot more. The basic engine, in fact, has produced 400-odd horsepower experimentally. For 1954 the engineers could have shifted a few more things around and come up with 250 or 275 hp. without any trouble.

On the drive along the lake a fast panel truck was streaking ahead of me in the lane to my right. I had three people, besides myself, aboard a 1954 Chrysler New Yorker. I decided to pass.

Truck Creeps Over

Up to that moment the driver of the panel truck was behaving as any good driver should. He was keeping strictly to his lane, Behind me, another car intent on passing the truck, was riding

my bumper.

Then things began happening. I had covered about a third of the truck's length on the left side when his front wheels began creeping into my lane. This was a perfect set of circumstances for a nasty highway accident. If I jammed on the brake, I stood a good chance of being rammed by the car behind. If I went on trying to pass, I could get sideswiped by the truck.

But if the car had the comph, I might

get out of the jam.

I mashed the accelerator. We fairly leaped ahead. My right rear fender

cleared the truck's left front fender with only inches to spare.

"That," said one of the Chrysler engineers, "is where our high torque pays off."

I agreed.

As the horsepower has gone up, the torque has gone up with it. It was torque—the sudden added push at the rear wheels—that came to my rescue.

The 1953 New Yorker model required 20.7 seconds to accelerate from 40 to 80 miles an hour. The 1954 New Yorker requires only 13.7 seconds. And, as a matter of interest, the 1950 New Yorker, with 135 horsepower, required 24.4 seconds.

The torque produced has gone up from 270 foot-pounds in 1950 to 330 in 1954.

James C. Zeder, Chrysler's vice-president and director of engineering, sums it up this way: "We want to cut down the time that you're on the wrong side of the road when you're passing another car."

Whether or not you approve of the boost in horsepower, I'd like to credit Chrysler with a sensible suggestion that it has made to those guests who were privileged to drive the new car prior to its appearance in the salesrooms.

"We'd rather," I was told, "that you didn't mention the top speed. It could only lead to somebody's getting himself in trouble trying to see how good his car was by comparison."

I opened the car up-but I'm not tell-

ing how fast I went.



THE '54 JOB on the left can pull out and pass a car going 40 m.p.h. and get back in the right-hand lane—all in 310 feet. On the right is a 68-hp. 1924 Chrysler.

The fact is, the new Chrysler isn't a great deal faster than the 1951 job. It wasn't speed that the engineers were after. It was acceleration performance in the cruising range and—let's not forget—added power to run today's accessories. Power steering, automatic transmissions and air conditioning don't require a vast amount of power, but it would be point-less to penalize performance for them.

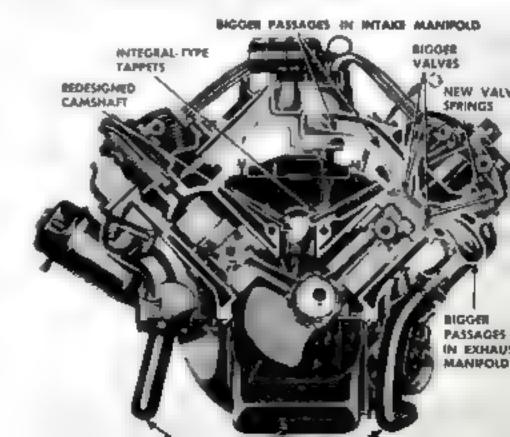
It takes a sharp eye to discover what has been done to improve the Chrysler's performance. There's a new four-barrel carburetor. There's new intake and exhaust manifolding and there are bigger valves to improve breathing. Waste gases are tunneled out through two tailpipes, one for each bank of cylinders, to reduce back pressure in the system. And there's a new camshaft that increases both the duration of valve lift and the overlap between the opening of the intake and exhaust valves.

Increased Stability on Turns

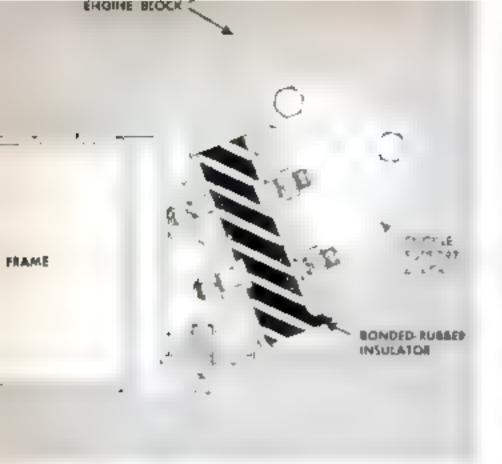
The important engine changes are pretty subtle. Look under the hoods of the '53 and '54 Chryslers, and you can't tell the differences in the engines.

Other improvements have been made in the car. There's a new transmission, described by its champions as the best of its kind, (It was described in the September issue of POPULAR SCIENCE MONTHLY.) This transmission contribTHE ENGINE still runs on nonpremium gas. The intake-valve diameters are 1.93 inches, compared to 1.81 in '53, and the exhaust valves are 1.75 inches compared to 1.50.

THIS CUTAWAY shows the changes, The compression ratio is the same at 7.5:1. The torque effort is 330 foot-pounds at 2,600 r.p.m., compared with 312 at 2,000.



NOVEMBER 1953



NOW SLANDING engine mountings insulate engine vibration from the frame latter. Moreover, the rubber entains its elasticity. The car's roll center has been raised so that the body will lean toward the outside of a hard turn by 15 degrees less.

utes a lot, of course to the cars performance

There's a new front suspension to increase the stability on turns. And the "roll center" has been raised so the car won't lean away from a hard turn.

When you get behind the wheel of one of the world's really fine motor cars, automatically you begin looking around for the spots where the designers have goofed off. I thought I had found one when I began examining the height of the power-brake pedal. Braking, I had

TWIN EXHAUST PIPES tattletule the fact that it's a '54 thrysler. Styling has been sharpened with stainless-steel trim except where eastings are used. They're chromed.



to lift my foot from the accelerator and bring it clear back to the point where the calf of my leg touched the seat cushion.

"Ah-hah." I said to myself, "what's

The answer to that one lay in longestablished Chrysler engineering policy. If you tell one of their engineers that the sun comes up in the east, he'll wait until sunrise and check it before he concedes, "It's a possibility."

A Reason for Long Brake-Pedal Travel

Chrysler was all set to install a powerbrake pedal just the same height as the accelerator pedal when somebody said whoa! Reducing the pedal travel is the same thing as increasing the size of the master brake cylinder—when the power goes off, it's incredibly hard to brake the car with the leg muscles alone.

"Let's suppose," preached the man who called the halt, "that some guy is starting down a hill in heavy traffic and his engine dies. The torque converter won't let his rear wheels turn his engine over fast enough to maintain sufficient vacuum for his power brakes. With short pedal travel, where does that leave him?"

So Chrysler is going to study that one for a spell before it makes any change in its brake pedal—if, indeed, it does at all.

There's Headroom to Spare

But I did find something to squawk about. The Chrysler Corporation has got a lot of six-foot men in it, topside. They like to get into a car with their Homburgs on. Me, I'm average. The roof of the sedan is too high. The Chrysler seats are too big for anyone except men six feet tall with posteriors to match. One of these days I hope that Chrysler will discover that all potential car buyers aren't brothers of the center on the University of Michigan basketball team.

Power, the new Chrysler has—aplenty. I may regret these words, come next year, but I'm beginning to suspect that we're about reaching tops in engine power for ordinary driving, even in the most chichi of America's quality automobiles. Personally, I think it's time we did. END

102 POPULAR SCIENCE

FACTS ON '54 CHRYSLER

Model: New Yorker DeLuxe convertible

Engine: V-8 with overhead lateral valves; 235 hp. at 4,400 r p.m.; compression ratio, 7.5 l; piston displacement, 331.1 cu. in.; bore and stroke, 3.13/16" by 3%"; piston travel (in feet per car mile at 30 m.p.h.), 1,437, crankshaft bearing surface, 43.8 sq. in.; torque, 330 lb.-ft, at 2,600 r.p.m.

Weight: 4,595 lb. (approx.); per hp., 19.5 lb.

Transmission: torque converter with planetary gearbox; rear-axle ratio: 8.36 1.

Steering ratio: 16.2 1 (with power steering), radius of turning circle, 21' 9".

Effective brake-lining area: 201.1 sq. in. Springs: front, coil, rear, semi-elliptic.

Outside dimensions: height (to top of windshield) 59 9/16"; over-all length with humpers and guards, 215%", width, 76%", wheelbase, 125%"; overlang, front 37%", rear 52%"; tread, front 56 5/16", rear 59%".

Inside dimensions: scat-cushion width, front 58", rear 495"; leg room, front 484", rear 395", scat height, front 145", rear 144", vertical distance, steering wheel to scat cushion with scat in mid-position, 55"; front-scat adjustment, horizontal 5", vertical 15",

Tire size: 8.00 by 15.

Pictures of new Plymouth and Dodge on next page.

FACTS ON '54 PLYMOUTH

Model: Belvedere four-door sedan.

Engine: 6-cyl. L-head; 100 hp. at 3.600 rp.m.; compression ratio, 7.1:1; piston displacement, 217.8 cu. in.; piston travel (in feet per car rule at 20 m.p.h.), 2,040; bore and stroke, 35" by 45"; torque, 177 lb.-ft, at 1,200 r.p.m.

Weight: 3,185 lb. (approx.); per hp., 31.85.

Transmission: 3-speed manual shift, with or without overdrive; or torque converter with 3-speed transmission. Rear-axle ratio, 3.73 1 (standard); 4.41·1 (overdrive).

Steering ratio: manual, 21.1 1 over-all,

power, 19.7:1 over-all. Radius of turning circle: 198'.

Effective brake-lining area: 158 sq. in.

Springs: front, coil; rear, semi-elliptic

Outside dimensions: height, 61%"; overall length with humpers and guards, 1935"; width, 745", wheelbase, 114"; overlang, front 32", rear 475"; tread, front 55%", rear 58%".

Inside dimensions: scat-cushion width, front 595", rear 585"; leg room, front 435", rear 435"; headroom, front 365", rear 355", scat height, front 145", rear 15"; front-scat adjustment, horizontal 5", vertical 15"

Tire size: 6.70 by 15.

FACTS ON '54 DODGE

Model: Royal V-8 four-door sedan.

Engine: 8-cyl. inclined lateral valve inhead; 150 hp. at 4,400 r.p.m., compression ratio, 7.5.1; piston displacement, 241 3 cm. in.; piston travel (in feet per car mile at 20 m.p.h.), 1,408, bore and stroke, 3.7/16" by 35", torque, 222 lb.-ft. at 2,400 r.p.m.

Weight: 3,585 lb., per bp., 23.9.

Transmission: torque converter and automatic transmission; or 3-speed manual shift with or without overdrive.

Steering ratio: manual, 22.2:1 over-all, power, 20.4 1 over-all, Hadrus of turning circle, 20'8".

Effective brake-lining area: 173% sq. in. Springs: front, coil; rear, semi-elliptic.

Outside dimensions: height (loaded), 62", over-all length with bumpers and guards, 205%"; width, 74%"; wheelbase, 119"; overhang, front 34%", rear 51%"; tread, front 55-15, 16", rear 58%"

Inside dimensioner scat-cushion width, front 60", rear 60%"; leg room, front 43%", rear 36"; headroom, front 36%", rear 36"; scat height, front 14%", rear 14%"; vertical distance, steering wheel to scat cushion with scat in mid-position, 5%"; front-scat adjustment, horizontal 5", vertical 1%"

Tire size: 7.10 by 15.



'54 Plymouth Is Longer, Offers Power Steering

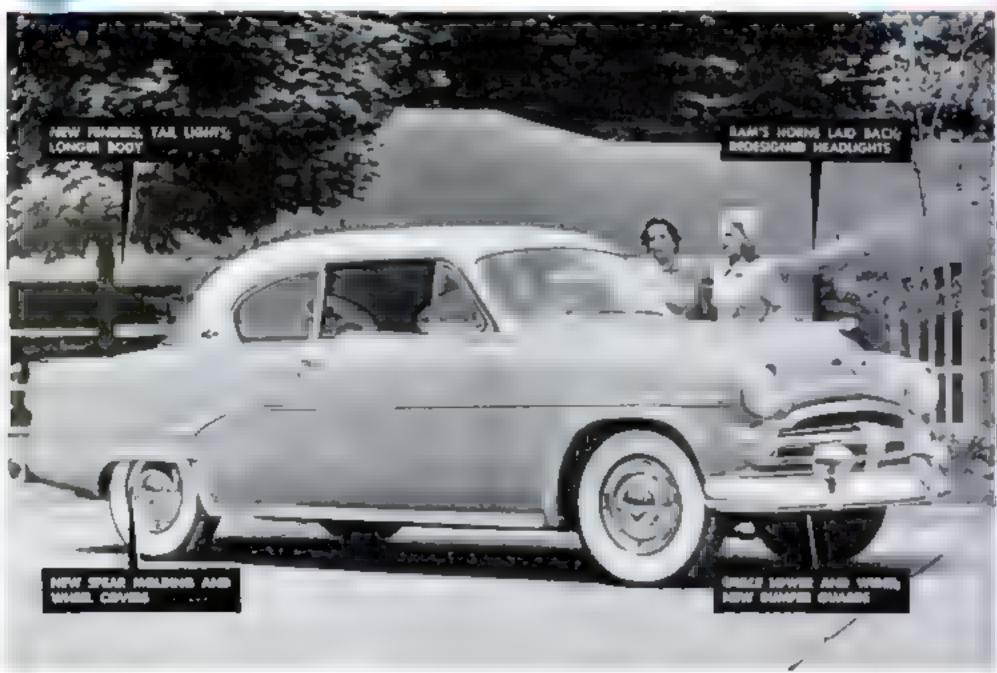
OPTIONAL linkage-type power steering, a 3%-inch increase in over-all length and a variety of small style and engineering changes mark the newly announced 1954 Plymouths.

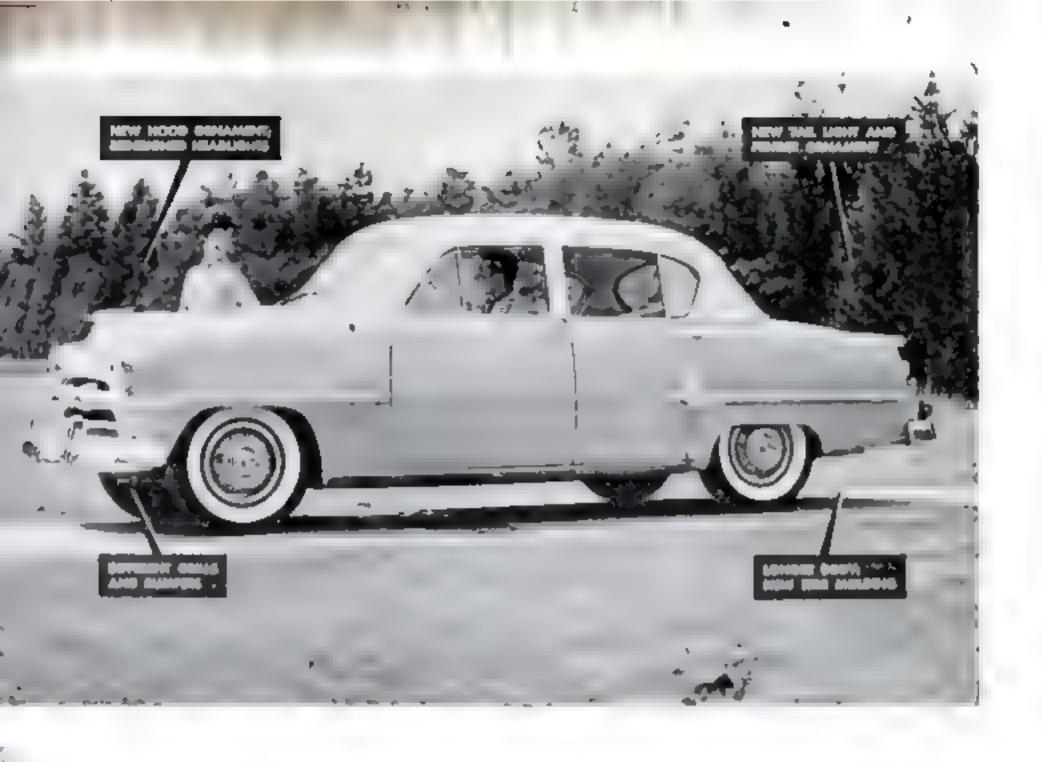
Plymouth's power-steering unit, manufactured by Monroe, comes into play when one pound of steering effort is applied to the rim of the 17%-inch wheel. The hydraulic-assist mechanism reduces steering effort up to 80 percent.

Styling changes are highlighted in the recognition features listed at right, Interiors have been dressed up with new vinyl fabrics. Springs in the seat cushions have been modified to give softer riding on smooth roads but greater resistance to bottoming on rough ones.

Mechanical changes include a new alloy steel for intake valves, an improved clutch and more capacity for the oil pump.

HOW TO TELL THE NEW MODELS





Dodge Gets New Transmission, 10 More Horsepower

TEN more horsepower on the V-8achieved by boosting compression from 7.2 to 7.5-a new fully automatic transmission, and power steering are highlights of the 1954 Dodge. The cars also sport some styling changes (left).

The compression rise is the principal change on the V-8 engine, which has a distributor with a slightly different advance curve. Meadowbrook models of the V-8 continue at 140 hp. Power of the L-head six has been raised to 110 hp. and compression to 7.25.

The new PowerFlite transmission is



identical with the one announced this year by Chrysler (PSM, Sept. '53, p. 116). It combines a high-multiplication torque converter with a fully automatic two-speed gearbox. There is no clutch pedal.

Power steering on Dodge is of the linkage type, with assist occurring as soon as one pound of effort is put on the wheel.

A new super de luxe series, the Royal V-8, heads the line. Models come in 11 body colors and 14 two-tone combinations, with restyled interiors and Jacquard fabrics. If you really want to shoot the wad, you can get air conditioning.



Hot Atoms Gauge Snowfall

RADIOACTIVE isotopes now report the water content of snow at remote points in California mountains. Once a day each isolated station automatically radios in its report, permitting accurate forecasts of how much water will be available for irrigation and power.

Cobalt-60, which emits gamma rays, is buried in concrete flush with the ground. Fifteen feet above it a Geiger-Mueller tube is hung from a pole. As snow piles up, it cuts off part of the gamma rays received by the tube. The more water in the snow, the more rays are blocked. The device measures the rays received and turns them into code signals that are sent on a fixed schedule to a recording center. There the signals are automatically decoded and the water content noted.

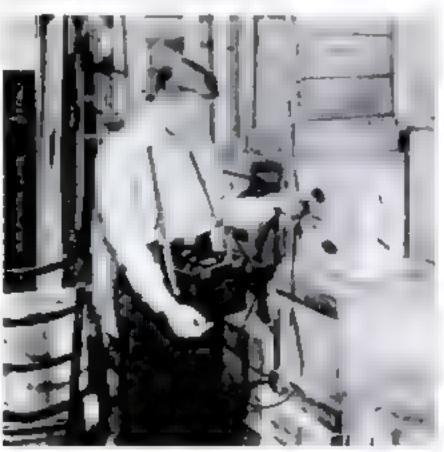
Light Makes This Clock Run

A FLASHLIGHT is "winding" the clock below. Light falling on a photoelectric cell generates electricity to drive a tiny motor. This motor winds the mainspring. One of the first successful examples of turning the energy of light into electrical energy for useful work, the novel Swiss clock can store up enough power in one hour's exposure to natural or artificial light to run it for a full day.

and the second s

Inside Moisture Measured

Wrrn all sorts of equipment sealed against corrosion, the armed forces need to know from time to time how the moistureproof packaging is doing its job. One device used is the Hydrotector, developed by the American Instrument Co. It consists of an electronic sensing device sealed in the package but with an outside connection. A portable meter, when pushed against this connection, reports the inside humidity.





Can We Predict Earthquakes?

Scientists now believe a day is coming when death caused by temblors can be prevented.

By James N. Miller

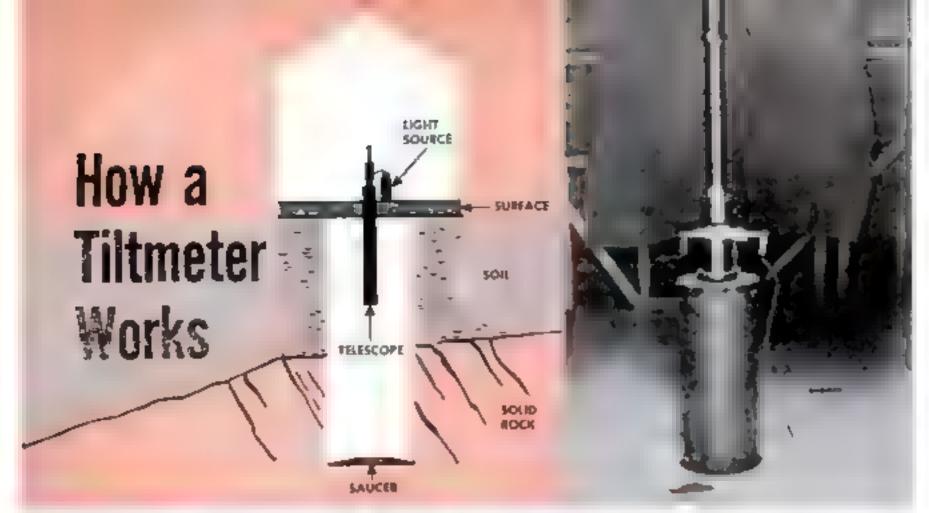
FOR scores of years, men of science have sought in vain to develop a way to predict earthquakes before they vent their fury. Success is now in sight.

Federal seismologists have developed and tested two new devices for forecasting the havoc wrought by such monstrous disturbances of the earth's crust as the series of quakes that laid waste several Greek islands last summer or the tidal waves that occasionally sweep walls of water over coastal towns

These lifesaving devices are the "seismic alarm clock" and the "tiltmeter." A third, promising even more detailed predictions at some future time, is a superprecise earth-strain gauge now being built into a California hillside.

The alarm clock already has proved its value. Last November a big seaquake (an earthquake under the sea) occurred in the far western Pacific. The alarm clock reported it. Scientists were able to forecast its effects hours before it set up violent waves that crunched on to Hawaii

MOST DEATHS and injuries in earthquakes are caused by falling debris, of which picture at top left is eloquent. It shows remains of shopping center in Napier, N. Z., after quake. Statue (lower left) was toppled in '06 San Francisco quake. Goal of seismologist is to warn people of impending shock in time to let them flee to safety.



TILTMETER is simple, as cutaway drawing shows. Saucer has cover that tilts with it. Light is reflected both from surface of liquid and from inside face of cover. Rays, viewed

through telescope (right, above) interfere with each other to create "fringes." These are interpreted as tilting of rock platform. Quake forecasts depend on rate of tilting.

and Midway Island, Residents fled to higher ground. No one was hurt.

The tiltmeter does the same job on land. It senses microscopic changes in the level of the earth's substrata that might herald a major disturbance. It is the scientist's equivalent of the tilt light on a pinball machine.

Where the tiltineter measures vertical displacement of the earth's crust, the new strain gauge, designed by Dr. Hugo Benioff of the California Institute of Technology, will measure horizontal disturbances.

By keeping a log of the strains recorded by several such gauges over many years, and noting the patterns of strain that appeared just before a particular earthquake occurred. Dr. Benioff hopes to be able to predict not only when and where quakes may be expected but also their intensity.

Just What Is an Earthquake?

An earthquake is one of nature's most majestic and terrifying phenomena. But just what is it? It's a sudden rupturing of the earth's crust, generally 10 miles or more below the surface. Nearly all quakes result from slippage between layers of rock along a "fault," a crack.

These faults may be vertical or horizontal. They may be a few miles long—or hundreds of miles long.

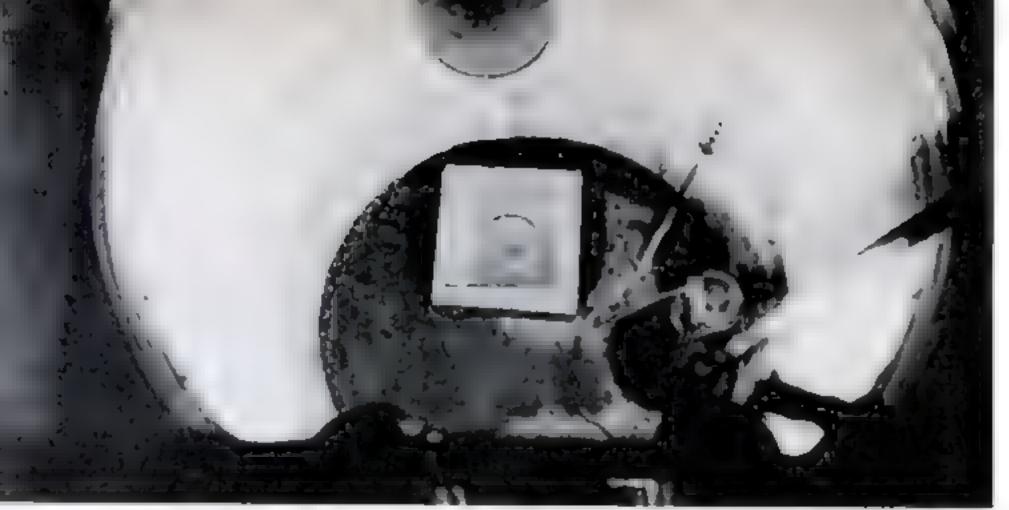
The amount of slip in a single quake has been as much as 47 feet vertically, as in an Alaskan quake in 1899, or 21 feet horizontally, as in the San Francisco quake of 1906.

Quakes strike practically anywhere. The rim of the Pacific, from Chile clear up, around and down to New Zealand, abounds with them. But Turkey has them too, and so do New York City, Kansas, Ohio, Oklahoma, Tennessee and the St. Lawrence River valley, among other places. The latest quake in the New York area occurred only last August. New York's biggest shock, in 1884, cracked building walls.

Both the alarm clock and the tiltmeter were developed by the Coast & Geodetic Survey. With them, it may be possible to forecast a quake or ensuing tidal wave a half-hour to five hours before it strikes

Officially, the seismic alarm clock is known as an electronic visible recorder. It sets off an audible alarm and lights up every time a big seaquake is recorded.

One of the alarm clocks has been installed in the basement of the Com-



LOOKING DOWN INTO PIT, saucer is at center, light source at right, telescope at top of photo. Putting saucer on hedrock prevents false readings from purely local causes.

merce Department building in Washington, in the office of Capt, Elliott B. Roberts, chief of the division of geophysics, U. S. Coast & Geodetic Survey. There are two in Alaska, one at Tucson, Anz., and one in Hawaii.

How the Alarm Clock Works

The electronic recorder consists of a galvanometer (an instrument for measuring small amounts of electric current), a seismometer (for recording movements of the earth during a quake) and an electric pen. Roger Wilson, who designed the pen for the Survey, explains the clock's operation this way:

When a seaquake occurs, its "finger-prints" are registered on the seismometer. A light beam reflected from a mirror on the galvanometer moves accordingly and strikes a photoelectric cell. Amplified, the output of the cell actuates the pen recorder. That makes the record permanent for study.

The alarm-clock feature operates like this: an auxiliary photoelectric cell, actuated when the light beam approaches the end of its swing, sets off the audible and visible signal. These signals are sounded and flashed in the station a few minutes after a seaquake occurs. The development of the tiltmeter, the other device, goes back to the late Thirties when a Japanese seismologist named Ishimoto made an odd discovery. He found that shortly before a great earthquake of a certain type strikes, there is a tilt in the earth's surface.

Since Ishimoto's discovery American seismologists have been looking into the matter, and not so long ago Dr. George E. Merritt of the National Bureau of Standards built a tiltmeter for the Survey. The device showed such promise that four meters have been set up in California.

More than one tiltmeter is desirable so that their reports can be checked against each other. Two are used at a recording station in Berkeley, Calif., jointly operated by the Survey and the University of California.

Shortly after these meters were installed, a minor quake struck. The meters telegraphed its coming. Federal seismologists emphasize that it may require a long time to determine whether such observations are as important in forecasting quakes in this country as they are claimed to be in Japan.

The third and newest quake-sensing instrument, Dr. Benioff's earth-strain gauge, consists mainly of a quartz rod, two inches thick and 79 feet long, sticking out from a six-foot concrete pier sunk



SECTION OF QUARTZ ROD for earth-strain gauge is carried into tunnel near Glendorn, Calif.

SECOND DOOR, inside tunnel, shields instruments from sudden changes in temperature.

into the rocky floor of a tunnel below California's Big Dalton Dam.

The other end of the rod will hang free, crudled in fine wires, but will extend just above a second pier built into the rock. This second pier will serve as the base of a microscope focused on the free end of the rod and hooked up to electronic instruments that will measure its slightest quiver.

These instruments thus will note any differences in distance—as little as one 10,000th of an inch—between the two piers caused by horizontal movement of the earth's crust as strains build up toward quake intensity.

While earthquakes happen all over the world every day—few are destructive—the quake areas of California fascinate seismologists because of the wealth of fissures in the basement rocks.

1906 Quake Killed 700

A slippage of 21 feet along the San Andreas fault, or crack, in 1906 caused the violent shock that, with fire, killed 700 people in San Francisco and caused damage of \$400,000,000.

Survey geologists report that since the 1906 quake there has been a "differential movement of 10 feet on the east side of the San Andreas fault as compared to the land to the west of the fault." That means, the scientists explain, that someday this accumulating strain will have to be relieved by another quake, perhaps as violent as the one in 1906.

Science doesn't positively know why cracks occur in the earth's crust. One theory holds that the principal cause is a creeping motion of the basement rocks, extending to depths of 30 miles or more. Since the motion isn't uniform, it sets up powerful stresses that cause the rock to rupture.

Another theory attributes the cracks to the shifting of millions of tons of earth from one place to another through erosion and sedimentation.

Whatever the cause of faults, when slippage occurs gigantic, convulsive waves are started. They go clear through



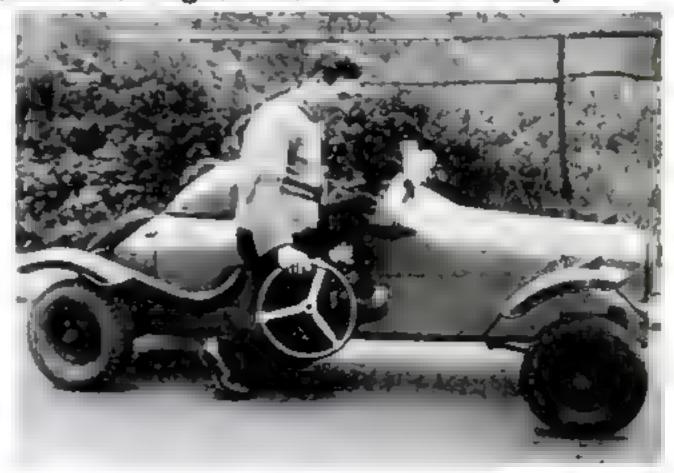
DR. BENIOFF (foreground) inspects 80-ft, concrete trough in which quarts rod will hang.

The quake-predicting instruments will be installed at this outer end of tunnel.

and around the earth, sometimes completing the circuit two or three times. These waves constitute an earthquake. Only near the starting point, however, are they violent. Their size and extent are almost beyond human comprehension. One report from the Tehachapi disaster said the release of energy there was equivalent to that of 100,000 atom bombs.

Britisher Builds Car That's a Tight Little Fit—But It's Cheap

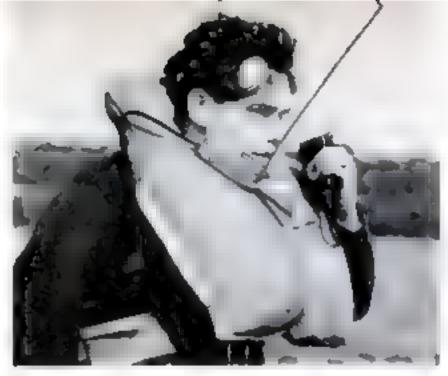
FRED MCARDELL of the movie Tight Little Island has built himself a car so tight that he must remove the steering wheel when he climbs in or out. He made every part of the car, except the 21.35-cubic-inch motorevele engine and the tires, for less than \$10. Fred claims that his machine will eruse at 50 miles an hour, do 65 miles to the gallon. Note outboard horn and nufty front fenders with headlights.





GIs Build Own Traffic Lights

Korean roads not equipped for handling heavy military traffic gave Gls a rough time until they dreamed up this three-way signal light. Put together of tin cans and Christmas tree bulbs, it is the brain child of Cpl. Irving J. Laborovitch, Minneapolis, and Pfc. John J. Stinglen, Philadelphia. Both are in the Thunderbird Division.



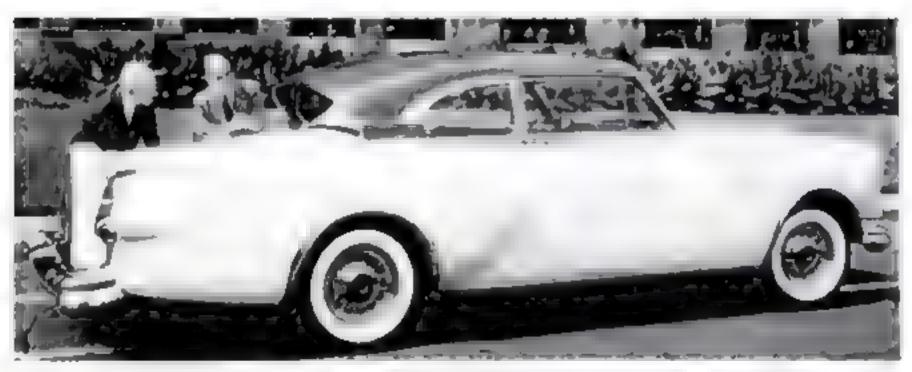
The Sarah Joins the Mae West

SARAH—the RAF's new radio beacon for crash survivors—is worn in a pouch on the Mae West and run by an underarm battery. It can send homing signals for 20 hours, reaching planes at 10,000 feet within a 66-mile range or surface ships six miles away.

Sprayer Scrubs Highline

This track-mounted sprayer cleans transmission-line insulators of salt and smog deposits in Florida communities. The power company says regular baths reduce shorts and help to eliminate television interference. A two-man crew can wash about 60 poles in a day.





Packard's New Experimental Sedan Gets Ranch-Type Roof

More comfort for back-seat riders is what Packard had in mind when designing the experimental Balboa (above). The roof forms a canopy at the rear, shading it from the sun. The window, which lowers into the

body, has a reverse slope to shed rain and snow. The arrangement adds headroom but eliminates the shelf above the seat. Tail hights are inset in sweeping fenders that meld with the long rear deck.



Clothes Make the Man...

WOOD-PULP COOK

MEN at a western wood-pulp mill who work around sulfuric acid protect every square inch of skin with the new acidproof suit at left. Hood, coat, boots and gloves have pink markings—the same color used to identify acid pipes—to keep the suit from being used in any other area of the Weyer-haeuser Timber plant, Everett, Wash.

RADIATION HAWKSHAW

Not a jockey but a radiation detective, the fellow at right will protect New York's Con-Edison disaster crews in an atomic attack. Trained to estimate how much radiation men can take and still stay on the job restoring electric power, he'll detect and classify hot areas. He wears white for quick identification and carries a Geiger counter, pickup probe and dust mask.



JET JOCKEY

A jet pilot who bails out in the outfit at left won't be exposed to supersonic wind blasts or left without an oxygen line because he's lost his helmet. Air ramming into him and building up pressure inside the suit escapes through a slot in his new helmet instead of blowing it off. This pressure release also keeps suit seams from ripping and creates a partial vacuum to clamp the helmet more firmly to his head. Douglas engineers designed the outfit.

JET BUILDER

An armored breastplate that could stop a bullet protects Lockheed workers from flying metal particles thrown off by high-speed miling and cutting machines. Made of laminated glass cloth and resin, it is %-inch thick, weighs only three pounds.





NOYEMBER 1953 [1]

Today's Pirates Sail the Highways

'As they iransferre he thought fast."



These tales of how truck hijackers work suggest also how drivers can fight back.

By Robert E. McCord

THE girl was pretty, and the young truck driver was lonely. He was rolling his big rig through the outskirts of Boston for a nightlong run to New York, and the journey seemed certain to be dull. Picking up hitchlukers was firmly forbidden by company rules—but what was the harm in giving a nice girl a lift?

She was headed for Bridgeport she told the driver as she climbed into his cab.

"That's a good long way." he said, with a chuckle of satisfaction

By their first coffee stop, in Rhode Island, they were old friends. He had even told her that he was piloting \$25,000 worth of eigarettes

"Excuse me just a minute, Al," she said demurely as they entered the bright restaurant. In the privacy of the ladies' room, she made a crisp, businesslike phone call.

Twenty-five minutes later, back on the highway, their gay conversation was abruptly cut short. A big sedan sizzled past and began to swing in front of them, braking hard, Al was barely able to stop without hitting it.

What in—" he started to ask the world augrily.

He got a prompt answer. Armed men hopped out of the sedan and ran to both doors of his cab. They ordered him out.

The Girl Did a Good Job

For a moment, he forgot his delightful companion, until he heard one of the holdup men say, as she strolled over to the sedan, "Good job, Sue"

The men bound and gagged him and tied him to a nearby tree, Next morning, shortly after Al was res-



cued, his stolen truck was reported abundoned in New Haven, its \$25,000 cargo gone.

This sort of thing, though the technique varies widely, happens every few minutes somewhere in the nation. Highway puracy will cost us around \$100.000,000 this year, cargo insurers predict. For months, the FBI has been planning counterattacks, conferring with local trucking firms, shippers, insurance companies, manufacturers of alarm systems and city police in many parts of the U.S.

Ninety-nine percent of all truck hijackings occur in cities, principally New York, Chicago, Philadelphia and Los Angeles.

Hijackers Like Night Work

Most hijackers, unlike their pirate ancestors, prefer to work after dark. They are well organized, planning and carrying out robberies as if they were military operations.

Hijacking gangs—most have under 20 members—are made up of specialists. First, and most important, is the "finger,"

who supplies advance information on cargoes and routes. All too frequently be works for a trucking firm. His role is vital, for hijackers want loot that is easy to market—cigarettes, cigars, liquor, canned goods, clothing.

That does not stop them from heisting less marketable items when the opportunity comes along, however. One truck driver, for example, parked a load of four tons of lead in a Jersey City lot for the night. The following morning it was gone. A classic blunder was the hijacking of a load

Often a gang will have a "spotter," whose job it is to follow an intended truck victim and warn his fellow robbers if the police show up. Some gangs use walkie-talkies for this thoughtful service.

of Bibles.

A smoothly functioning gang must have a "drop-man," who has warehouse space for stolen goods, and a "fence," who will dispose of them. In some cases, both drop-man and fence have been discovered to be businessmen with respectable reputations.

One of the most costly truck cargo robbenes in recent months probably involved both an inside man and a spotter. It happened one morning last February, when Fred Blumberg maneuvered a truckload of television and radio tubes into the loading dock of an electrical company's warehouse in downtown New York, Blumberg went into the warehouse office to arrange for unloading.

When he returned to his truck, a smaller, panel-type truck was parked beside it. He barely glanced at it as he stepped into his cab, but at that moment a man emerged from the smaller truck with a drawn revolver. He forced Blumberg into the rear of the panel truck, where he was blindfolded and bound.

Blumberg's truck, containing a \$400.-000 cargo, was immediately driven off. He himself was trundled around New York streets in the back of the panel truck for four hours, then dropped off in an abandoned railroad station on Long Island, where he finally managed to free himself.

Threats Are Usually Enough

Although heisters usually carry guns, hijackings rarely involve shootings. The threat of violence is usually enough. Sometimes a hijacking is made so easy, through carelessness or inadequate protection, that even threats are not necessary

For instance, a huge red cargo trailer containing 695 cases of liquor and 178 cases of playing cards was left parked beside the road near Harrisburg. Pa, while its driver unhooked the tractor and drove off to York to have repairs made. Hijackers, who presumably had been following this particular load, rounded up another tractor, connected the air hose and couplings to the parked trailer and made off with loot valued at \$53,000.

Sometimes a quick-witted driver man-

ages to turn the tables on his captors.

One cargo thus saved consisted of cigarettes, being trucked from Richmond to Norfolk. The driver was forced to a stop along a lonely stretch of highway and held at gunpoint while the robbers drove his truck down a side road, put the vehicle out of commission, and tied him to a tree within shouting distance of the highway—with the blithe assurance that he wouldn't have to wait very long to be rescued.

As they transferred the load to another truck, he thought fast.

"I baven't got any money to get back to Richmond," he pleaded, as they were about to leave.

At that, the gang leader, a remarkably magnanimous type, opened his wallet, took out a new \$10 bill, and slipped it into the driver's shirt pocket.

"Don't worry, buddy," he said.

In a fairly short time, the driver was rescued, but he was shrewd enough not to touch the money that had been given him. Once back in Richmond, he telephoned the FBf. They were able to get clear fingerprints from the bill that led to capture of the gang and recovery of the stolen cargo.

[Continued on page 262]

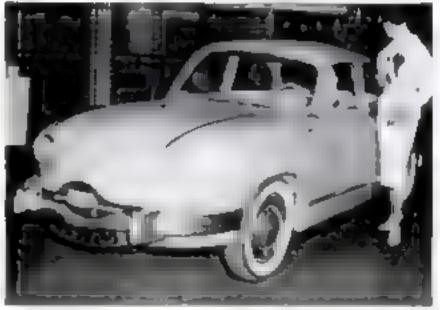




Even Engine Is Aluminum in This French Sedan

The six-passenger Dyna Panhard is about the size of a Hudson Jet but weighs barely more than half as much: 1.430 pounds to the Jet's 2,700. And although its engine develops only 42 horsepower (to the Jet's 104), it knocks off a top speed of 80 miles per hour.

Secret of the new French car's low weight and high performance is that it's mostly made of alumnum, Alumnum alloys are used for the chassis, body, transmission case—and even the engine, Body and chassis are pressings spot-welded into one unit, streamlined on the basis of wind-tunnel tests.



A flat, two-cylinder, air-cooled engme, mounted well forward of the axle, drives the front wheels. It gets 33 miles to the gallon.

Full-Size Opera Glasses Fold Flat to Fit in Your Pocket



POPULAR SCIENCE

HINGED front lenses let these 3%-power opera glasses (left) fold to the size of a cigarette case for carrying. They're made in Japan and imported by Compass Instrument & Optical Co., New York.

▶▶▶ A new quick-drying material that can be sprayed on metal like paint makes the surface withstand temperatures up to 5,000° F. It was developed by B. F. Goodneh for the armed forces for use in rockets, guided missiles. Another version protects metal from acids, alcohol and weathering.



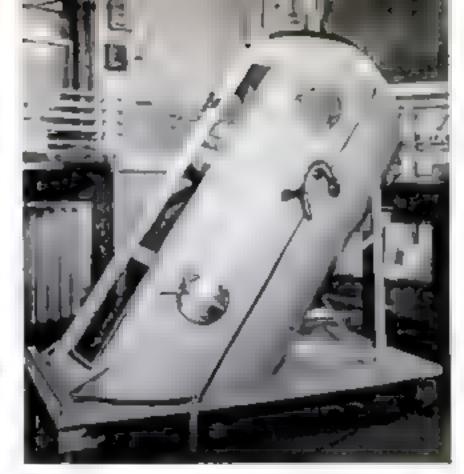
Vibrator Detects Cracked Rails

This track walker is using a new British device, the Audigage, to detect flaws in rails. His headphones pick up the echoes from high-frequency impulses bounced against the rail by a vibrator. A sound rail gives off a high whine; a cracked one, a sudden drop in pitch. The outfit runs on a battery carried on the operator's back.



Built to Scale: 262,144-to-1

Titis 29-inch plastic fly, made as a museum model, is 262,144 times the size of a real one. Created by the C-D Olsen Studios of West Nyack, N.Y., it is authentic in every detail from the more than 14,000 spines and hairs which adorn its body to lustrous wings .015-in. thick.



New Lung Lets Patient Sit Up

A Polito victim needn't he on his back in this new respirator, being tested at the Harvard School of Public Health. It was designed to give a patient a more normal view of the world than he gets when confined to other "iron lungs." He sits on a coinfortable chair that can be raised, lowered and otherwise adjusted.



Two-Wheel Skates Cut Noise

CENTERED wheels give these new roller skates the feel and maneuverability of ice skates. The artificial-rubber wheels, rounded instead of flat, are said to be less noisy, speedier, better for pivots and sudden stops. The two-wheelers are made by the Rocket Skate Co., Burbank, Calif.

How You'll Get TV Colorcasts



Color broadcasting has been started—

here are answers to your questions about it.

By Devon Francis

OLOR television broadcasts—colorcasts-have been started. They are on the air a few hours a week.

For the moment they are confined to the New York area. Before the turn of the year some programs will be networked to Chicago. On January 1, Pasadena's Tournament of Roses and the Rose Bowl football game will be networked in color.

Dozens of TV stations throughout the country are getting ready to carry network shows in color. More will follow.

The owners of 24,000,000 TV sets in black-and-white are asking, "When can I get color TV?"

The answer to that question, and to others on the coming boom in colorcasts, follow:

When can I get a color set?

Next year, if you're lucky. Manufacturers probably will make 50,000 sets by next fall. After that, production ought to climb rapidly.

What will it cost me?

From \$800 to \$1,000 at the start, according to RCA, sponsor of compatible color TV. Production will drop the price. Color sets probably always will cost half again as much as blackand-white sets.

What do you mean by compatible?

That colorcasts can be received as black-and-white on your present set.

Can I change my present set to receive color?

Yes. Estimates on conversion costs by the manufacturers themselves run from 30 to 90 percent of the price of a new color set.

When will my local stations begin colorcasting?

More than 55 TV stations already have signed up for network color. Dozens more will follow in the next few months. But few will put their own color programs on the air in the first year-color cameras and related equipment will be scarce for a while.

When will the rest of the country get color TV?

That will depend on how fast the stations can obtain the equipment. Any station now telecasting in blackand-white can modify its equipment to accept colorcasts from the networks. It will also depend on how fast the telephone company's equipment-necessary to networking TV-

is adjusted to carry color. The Southwest, Northwest and mid-South, exclusive of coastal areas, have few TV stations as yet.

How good, actually, is the color?

It's fine. A public survey made by RCA-NBC during one phase of the development work showed that most viewers were delighted with it. To the question, "How do you feel about the over-all quality of the color television pictures you have seen?" 98 percent responded that it was excellent, very good or good. About the same number said the detail was clear. Three-fourths of the viewers thought the colors were about right, one-fourth that they were too vivid.

The handful of people who didn't like color TV said the pictures were fuzzy or that the colors weren't true.

How will I operate a color set?

On present models, the same as you do your black-and-white set. There's one more control. Turn it far left, and all color is drained from the picture. Turn it far right, and the colors are "saturated," with reds predominating. In between, you adjust the set for as much color as you want. Eyes differ.

How big will the picture be?

To start, 14 inches. Bigger tubes are planned.

What will be the size of the cabinet?

About that of your present one except that it will be a few inches deeper to accommodate a longer kinescope.

Will I need a different antenna?

No, but your antenna installation should be good.

What will it cost me to replace a bad color tube?

Until they begin manufacturing tubes in the millions, probably upward of \$250,

Will the repairman charge me more to fix my color set?

Probably, it's more complicated.

Will color eventually obsolete my present set?

Only if you insist on having color. The experts say there will always be telecasts in black-and-white. What would color add to the Friday-night fights and dozens of other programs devoid of color?

How good is black-and-white reception from a colorcast?

Excellent. Most viewers say it's better than regular black-and-white reception. Color pictures have a better "half-tone rendition" than black-and-white. You can detect little spots embedded in the scanning lines if you get too close, though. Those are created by the color sub-carrier in the colorcast. Except for them, your present set will "ignore" the color signals.

What makes the color in color TV?

TV colorcasts still depend on a standard black-and-white signal. But the color camera separates what it "sees" into three color images. They ride on an additional signal, or wave—the sub-carrier referred to above.

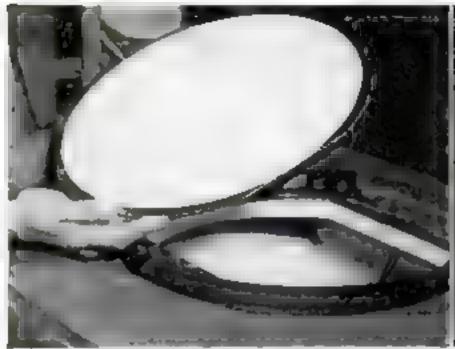
This is sandwiched in between the frequencies assigned to the TV black-and-white picture and the sound frequency. Actually, the color signal sort of rides piggyback on the black-and-white frequency. When the signals reach your color set, having the same number of scanning lines (525) as your present set, they will be converted into color indications on

[Continued on page 266]

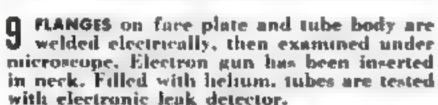


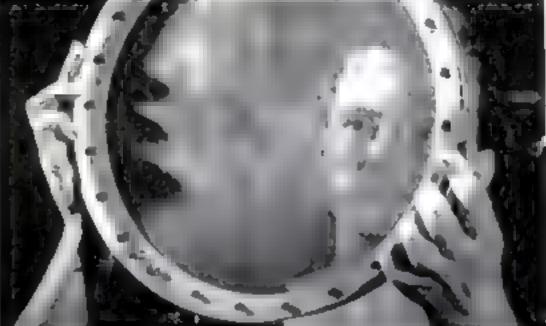
1 PHOSPHORING the face of a developmental color TV tube for a home receiver starts in darkroom. Design of shadow mask a through which electron guns shoot at colored phosphors to produce picture—is photographed on sensitized glass.

2 SHEET OF GELATIN next is laid on negative plate. Exposed to ultraviolet light, it hardens except where 200,000 tiny dots on negative obsteuct the light. Soft gelatin behind the dots is dissolved out with water, leaving a stencil for phosphoring the tube face.



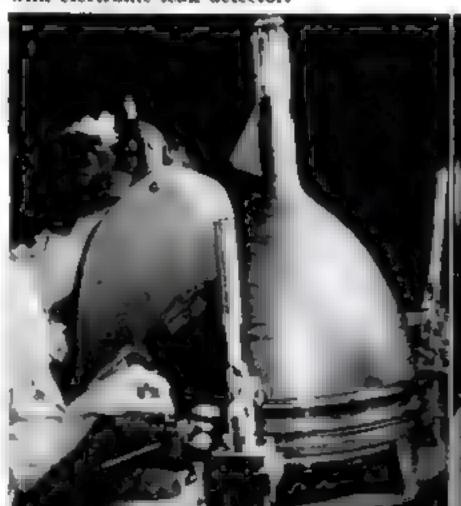
5 ORIED, PHOSPHOR-COATED tube face is put over light source for study under microscope for any flaws in servings of red, green and blue phosphors. Colors are due to addition of ailver or copper actival rs to phosphors.





6 ASSEMBLY OPERATION is next, RCA operator holds shadow mask. Unlike one-piece black-and-white tubes, color tubes have a separate conical body and tube face. Present costly handwork will be mechanized later.

10 PUMPED FREE OF AIR, tubes are realed and tested for color fidelity and fineness of picture detail. Barium, which has an affinity for gases, has been put in necks to make vacuum near-perfect.



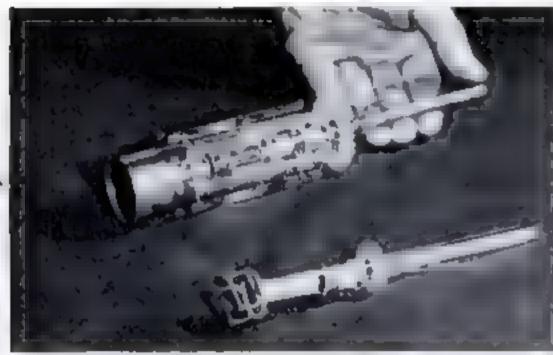




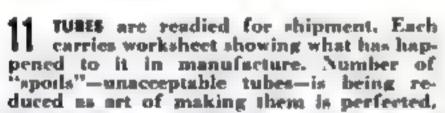
3 REMOVED FROM PHOTO PLATE, stencil is laid on wire supporting screen in frame. Shadwar mask itself cannot be used as stencil because phosphors must be spaced for "angle shots" from electron guns. Photo process assures such spacing.



4 GREEN PHOSPHOR PASTE (it looks white)
4 is poured on stencil, forced through holes
with squeegee. This prints first third of
series of 600,000 phosphor dots on tube
face, Stencil is moved 1/1,000 inch to print
red phosphors and again for hive ones.



T ELECTRON COLOR GUN—actually three guns in one—is bigger than that for black-and-white TV, in foreground, RCA has demonstrated experimental tubes bigger than present developmental types.



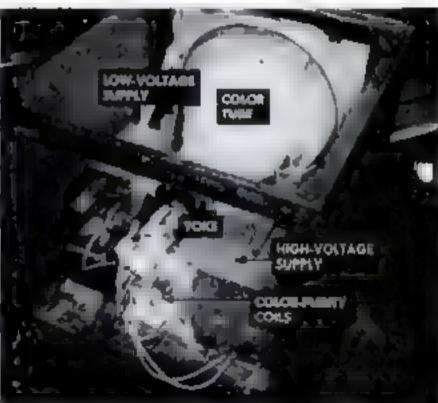


O Shadow mask is first. Then come phosphored plate, a mask for outside of tube face and a glass face plate. Inside of tube body has been painted with graphite.

12 BACK of your color TV set will look somewhat like that of this experimental one. As for the front, it will look like a black-and-white set, until you turn it on.

Photos taken at RC4 tube plant, Lancaster, Pa.







New Sights in the Sky



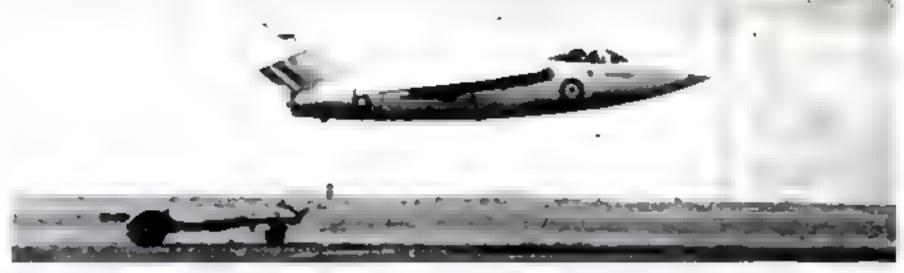
24 POPULAR SCIENCE

Missile Sheds Booster Rockets

Form two rockets fall away in trails of smoke after having done their job of boosting this new British guided bussile (center in photo above) skyward to speed along on its own at 2.000 miles an hour. By shedding its booster units simultaneously and smoothly, the missile is not thrown off its course toward an enemy plane. Weapons of this type are being built for launching from the ground, ships or planes.

Hunter's Tail Senses Subs

FITTBOXIC greimicks in the elongated tail of this Lockheed Neptune enable the big Navy plane to detect enemy submarines lurking several hundred feet below the ocean surface. For the kill, it carries depth bombs, rockets, standard guns, and can even strew mines in the sub's path



Rocket-Powered Cart Launches New French Fighting Plane

DESIGNED for ground support and as an interceptor, the Baroudeur jet airplane needs no prepared runway for take-off. A bogie truck, powered by six rockets, serves as a catapult to get the plane into the air from

any reasonably level ground. The cart is stopped by automatic brakes. Skids underneath the plane, replacing conventional landing gear, enable the craft to land on almost any flat terrain.



Britain Flies Delta Trainer

To FAMILIARIZE pilots with the flying characteristics of delta-wing airplanes, Britain has developed this dual-control version of its famous Avro 707 research plane. It is powered by a single Rolls-Royce Derwent turbojet engine.



Glider Puts on Brake

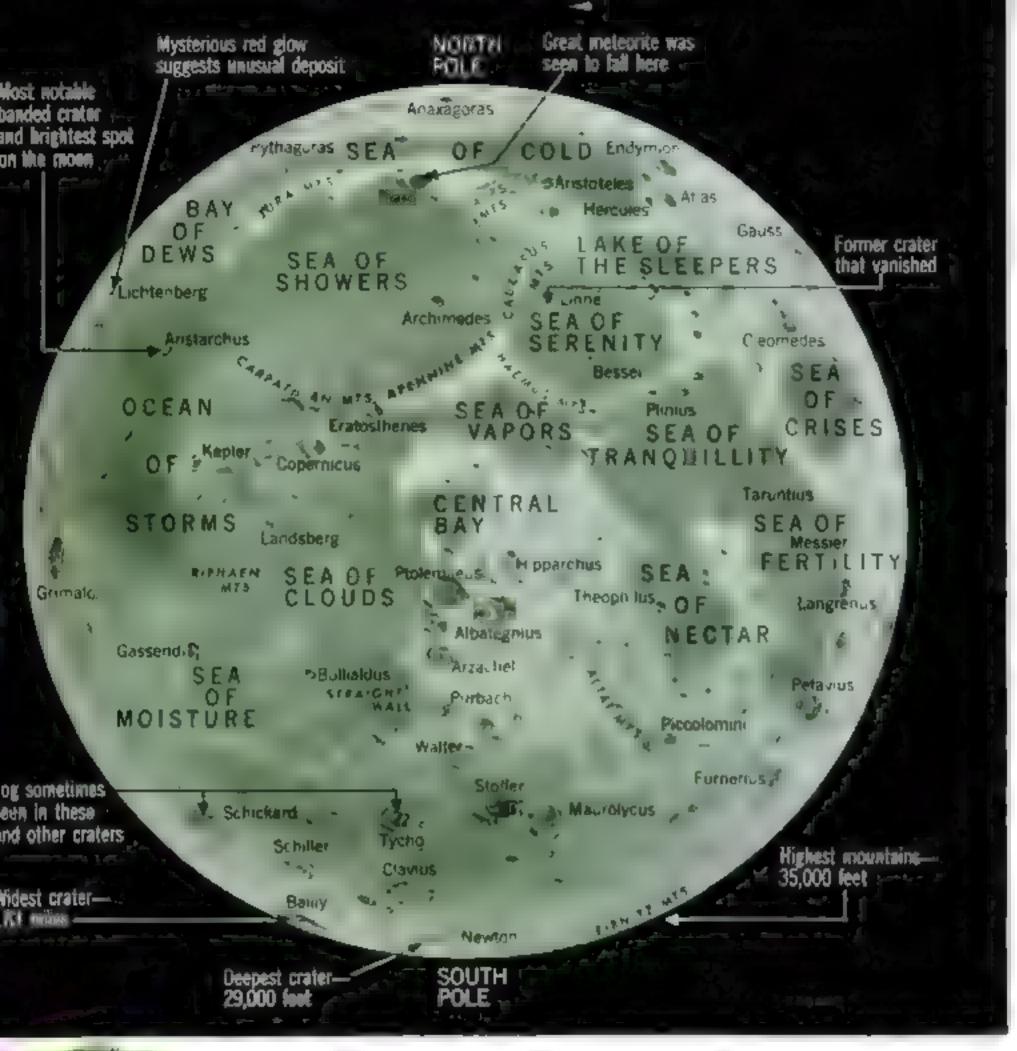
A TAIL parachute is released by the pilot to slow down his glider as he prepares for a landing after having set a speed record of 67.5 miles an hour. The new second was established recently at an Oerlinghausen, Germany, sailplane meet.



Jet Bomber Becomes a Tanker to Refuel Other Jets in Mid-Air

This is probably the world's first demonstration of a jet refueling a jet in flight. Both are Air Force B-47 bombers. The one at the right, however, has been modified as an aerial tanker. Using the probe-and-drogue

method, the tanker releases a flexible hose with a funnel-like drogue at the end. The bomber to be refueled has a spearlike probe in its nose which is slipped into the drogue's coupling mechanism.





An astronomer's guidebook promises first visitors to Luna a geologist's paradise to explore—and eerie puzzles to solve.

By Alden P. Armagnac

"LEIBNITZ MOUNTAINS. The highest peaks of all, outranking Everest...

THE SEA OF FERTILITY. One of the larger seas of the Western Hemisphere ... NEWTON. The deepest of the craters...." Absorbed in the scenic wonders

described in your guidebook you may be unprepared for an outstanding impression of your first visit to the moon.

That's the powder. A blanket of it covers everything, even steep slopes of jagged mountains. Perhaps a foot deep, the glassy stuff yields underfoot like quicksand, and you must learn the knack

Moon's Mysteries Challenge Spacemen

Moon map (left) shows gaping craters, towering mountains and other points of interest for future explorers and sightseers. Fascifully named "sees," actually dry plains, form great dark areas. So you can recognize there at sight, this "laymen's map" shows the moon right side up, just as it looks to the naked. uye. (Astronomers' maps show the moon upside down, as it appears through their telescopes.) Here the teas are given their popular English names, translations of the old Latin ones still used by astronomers because they are internationally tonderstood, Picture at right illustrates huge size of 54-inch-diameter image of moon obtainable for photography with top magnification of 200-inch telescope at Mt. Falomar, Calif., ...



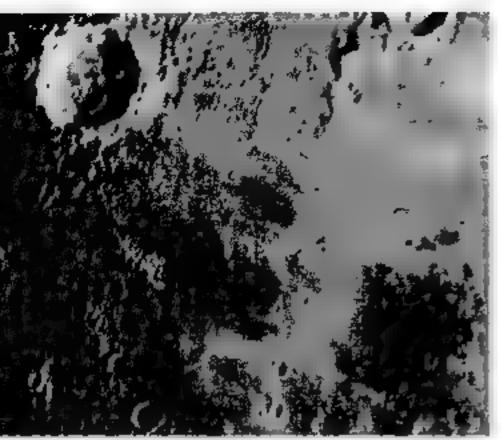
of getting around in it. Static charges make it cling to your space suit and the window of your space helmet. Although fine as face powder it isn't like dust since there's virtually no air for it to float in. It's an odd sight to see the powder settle instantly, after you stir it up by wallowing through it or by sking over it.

What's on the moon—the powder and the rest will become firsthand experience as soon as rocket ships begin plying outward from earth's man-made space stations. For it stands to reason that our nearest celestial neighbor, whose average distance is only 238 \$57 miles, will be the

first one visited by pioneering spacemeta. So declares a young British astronomer, Patrick Moore, secretary of the British Astronomical Association's hugar section and a leading member of the British Interplanetary Society.

His new book. A Guide to the Moon, offers would be voyagers to faira by telescope or spaceship a veritable travel manual. Places they should visit and sights they II see, are described in the light of the most recent scientific findings.

Pointed out too are invsteries of the moon that may be fully solved only where



PROM APPROACHING SPACESHIP, 36-mile-wide lunar crater Copernicus and crater Eratos-thenes, nearly as large, will look like this. Photo is through 200-inch Paloniar telescope. Odd optical illusion turns depressions into elevations, if sunlight is mistaken as coming from left of picture; actually it is from right.

the first rocket ship blasts down to a landing: Is there life on the moon? Has it any atmosphere? Are volcanoes still active? What's on the other side of the moon?

Today these questions remain unanswered, even though the face of the moon that is turned toward us has been mapped better than the interior of Greenland. To an observer at the world's most powerful telescope, the moon appears only 24 miles away. The best photographs of its rugged and pitted

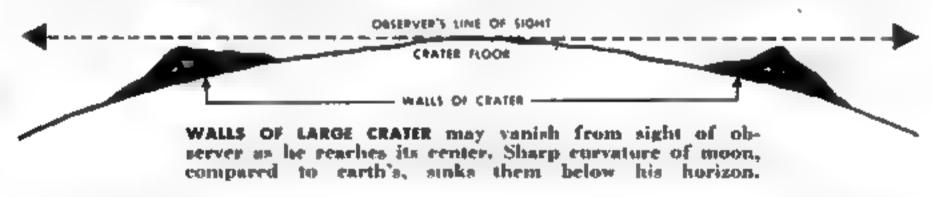
Today we know there's no water on the moon, and these great dark areas actually are vast plains, but early observers' fanciful names for them have stuck Craters bear the names of scientists and other notables of past and present, with a few mythological characters thrown in; and some of the moon's mountains are named after famous ranges on earth.

If explorers were ready to start for the moon today, they could take along splendid maps of these surface features. Probably the best, by Dr. H. P. Wilkins, British astronomer, was published in a 100-meh-diameter edition in 1951.

And an expedition might do well to carry the latest maps! For astronomers no longer consider the moon, as they once did, a totally dead and changeless world.

That view was held by the two foremost lunar observers of the nineteenth century, Wilhelm Beer and Dr. Johann Madler. They completed a lunar map and a book on the moon that were masterpieces of thorough and accurate work. Then they quit. Why observe the moon further?

Thirty years later, however, an astronomer looked in vain for a deep six-mile-wide lunar crater called Linné that had been well known to them. Linné had vanished. Where it had been, there was only a white patch, which marks the spot to this day. The most likely guess



surface reveal details only a few yards across. Enjoying such an excellent view of the moon's 2,160-mile-wide disk, astronomers have been able to discern more than 10,000 different surface features upon it.

Upward of 700 of the most prominent ones have received names. The moon's "seas," "oceans," "bays" and "marshes"

of many is that landshdes, triggered by a "moonquake," caved in the crater's walls and destroyed it.

Imagine a moon explorer witnessing such a catachysm at close range—cliffs falling away, the lunar landscape changing before his eyes. It would be all the more awesome because it would happen in total silence—there cannot be enough

air on the moon to carry a whisper of sound.

Close observers have since found other mystifying developments on the moon. In 1939, Moore himself observed a dense fog which filled a whole crater with a whitish mist. With no water to form clouds, what could the mist be? Carbon dioxide seems a reasonable guess, Moore declares. And since this gas is given off in volcanic eruptions, mists seen by him and others may indicate that the moon still has active volcanoes.

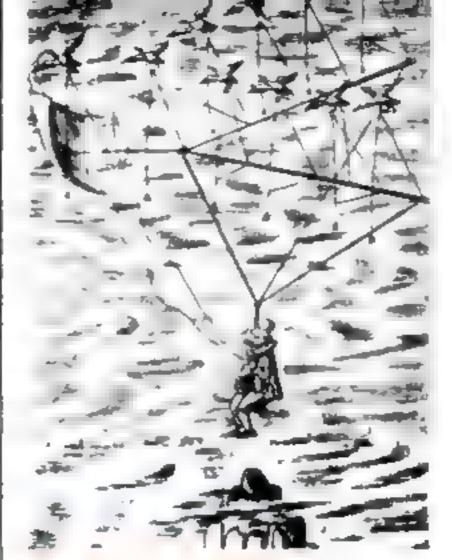
The most remarkable object on the moon, perhaps, is the 29-mile-wide, 5,000-foot-deep crater Aristarchus. Its central peak is the moon's brightest spot, even shining starlike after dark by reflected light from the earth. But still more interesting are dark bands, radiating spokelike from the central peak to the outer walls and up them.

Does Life Exist on the Moon?

Mysteriously these markings wax and wane, They darken progressively outward after sunrise-then shrink and fade toward the end of the weeks-long lunar "day." Through a powerful telescope, the gray-bordered dark streaks resemble the "canals" of Mars. And, likewise, they may be signa of life. Along surface cracks of volcanie origin, Moore suggests, a primitive form of lunar vegetation—lichens or mosses-may develop under the sun's warming rays and revert to dormancy during the bitter-cold period of darkness. Volcanic carbon dioxide gas leaking from the fissures might sustain its precarious existence.

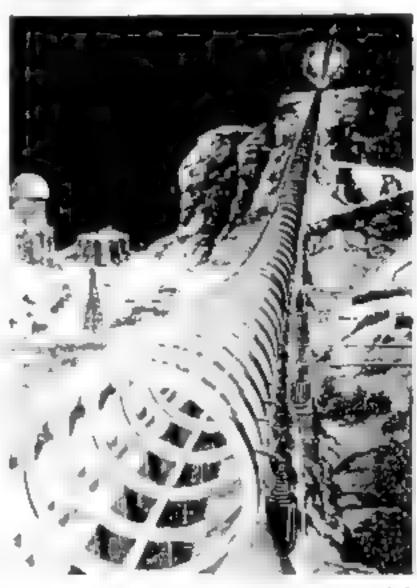
A lunar newspaper would have had sensational news to report in April, 1948. A tiny brilliant flash of orange-yellow light was observed then just within the crater Plato. It must have marked the impact and explosion of a great meteorite—perhaps as big as the one that struck Siberia in 1908 and leveled trees 20 miles away. A few similar observations are on record.

But the most interesting thing about them is their extreme rarity. For if the moon had no atmosphere at all, it has been calculated, the flash of a 10-pound



Moon Voyagers of Fiction Show Centuries' Progress

Story-TFLLERS' ideas of space travel reflect evolution, through the ages, of today's understanding of the problems. Wild swans, hitched by cords and pulleys to the contrivance above, bore a voyager to the moon in a popular tale of 1638. Discovery that space was airless changed styles to ships shot from guns, or from an electromagnetic ramp as below. Rocket spaceships now seem more feasible.



meteorite's impact would be visible from earth with the naked eye, and about 100 such flashes would be seen yearly. Since no such thing happens, is the moon totally "airless"?

That the moon can have no more than a trace of an atmosphere is evident, from the usual absence of a lunar twilight (rare exceptions have been reported) and the lack of refraction or light-bending when the moon's edge obscures a star. But an atmosphere 1/10,000 as dense as the earth's, at surface level, could escape

detection by such tests. Even so slight a trace—which does exist, recent delicate optical experiments suggest—would have tremendous consequences.

Imaginative accounts have pictured lunar explorers bombarded with death-dealing meteorites, and forced to take underground shelter. But a trace of atmosphere would suffice to form a "meteor screen" and burn up most meteors before they reached ground, as on earth. The rarity of observed flashes tends to confirm that this is just what happens.

Powerful ultraviolet rays of sunlight, another hazard anticipated for spacemen on the moon, may likewise be filtered out by a lunar atmosphere. But it must be so rarefied and devoid of oxygen as to be useless for breathing; explorers must bring oxygen along.

Space suits and above-ground living quarters must be insulated against violent extremes of heat and cold—the moon's surface temperature soars to 214 degrees when the sun is overhead, and plummets to 250 degrees below zero at night. Enduring such rigors may seem inconceivable to an earthman—but on the moon temperature loses its accustomed meaning, as there is practically no air to imprison you in a stifling blanket of heat, nor to drain the body's lifegiving warmth with polar gales.

A voyager disembarking upon the near

side of the moon, and looking upward whence he came, will see a perpetually black, star-studded sky. The glowing earth-four times as wide as the moon looks to us—always hangs overhead, swaying only a little to and fro. And the sun, a blazing beacon, journeys so leisurely across the heavens that a day is about 29 times as long as on earth.

In the sun's glaring rays, the lunar landscape will look as unreal as stage scenery under kineg lights. Its dazzling highlights and black shadows will startle

the explorers, and they will have to summon up their courage to explore lunar craters that reach 183-mile width and 29,000-foot depth.

Rising like an island from the flat lava floor of the Ocean of Storms, majestic Copernicus, "Monarch of the Moon," measures 56 miles from crest to crest. Its ridged and gullied outer slope is a gentle one, and can be climbed with little exertion, since a 150-pound man weighs only about 25 pounds on the moon. From its crest some future Daniel Boone may look down 17,000 feet, past masses of tumbled rock, into an inner amphi-

theater as large as Rhode Island.

But when an explorer reaches the center of a crater floor, the outer walls may seem to have shrunk or even vanished completely! Why? Because the moon's curvature, much sharper than the earth's, will sink most or all of the towering ramparts below his horizon.

Lunar mountains surpass anything on earth in wild grandeur. For lack of any sea level with which to compare their altitude, it must be gauged by comparison with nearby terrain. Loftiest of all by this standard, the Leibnitz Mountains near the south pole attain a height of 35,000 feet, more than a mile higher than Mt. Everest.

Strange and varied formations await sightseers: "clefts" or gaping cracks in

[Continued on page 260]



\$16 NS OF LIFE ON MOON? Radiating apokelike from center to rim of Aristarchius, and a few other craters, dark hands resembling Mars' "canals" mysteriously wax and wane. They may be primitive vegetation. Sketch of handed crater, above, is adapted from one by author of moon guidebook.

New Ideas

FROM THE INVENTORS



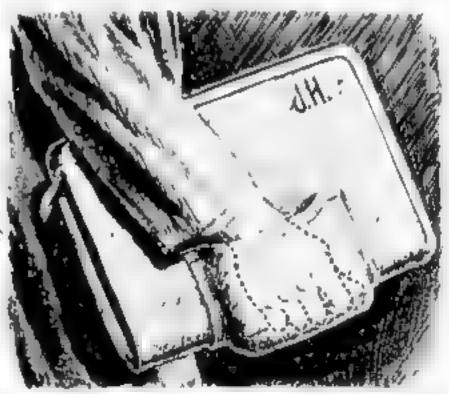
Rifle to Drive Nails. This nail-driving firearm would magnetically hold a nail—or a spike or rivet—and allow just the tip to project. The user would place the tip in position, then fire a blank cartridge. Exploding gases would ram a piston against the head to hammer the nail home.



2 Hand Crank to Power Boat. A duck hunter could navigate silently through marshes if his boat had this hand-driven prop and rudder. Enclosed gears would turn the propeller shaft noiselessly. Operator would sit in the back. A motor could also be used to crank the drive gear.

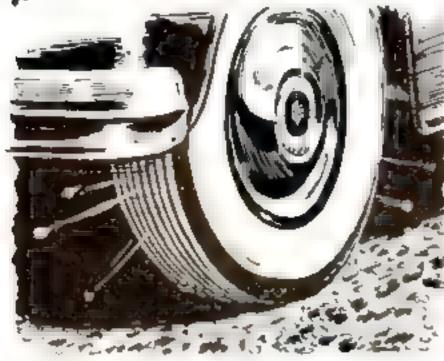


3 Heated Wiper to Deice Windshield. A windshield wiper, says the inventor of this new one, can handle ice, sleet and snow easily as long as the rubber squeegee remains wet and pliable. To keep it that way, he would put an electric heating element in the blade holder. It would radiate enough heat to keep the wiper from freezing up.



4 Brief-Case Mitt to Shield Hand. Salesmen, lawyers and other brief-case carriers would escape their usual harvest of chilled fingers if portfolios came equipped with hand-warming extra pockets. This glove would also help prevent loss or theft since the carrier's hand would be interlocked with the case.

MORE New Ideas from the Inventors



5 Tire Grooves to Eject Stones. Undercut grooves would keep these tire treads tree of pobbles. The undercut would narrow the groove at the point that touched the road, but would flex it open when the tread was not in contact with the ground. Only tiny stones could be picked up and these would be ejected as the wheel turned.



6 Stool to Be Worn on Leg. A farmer wearing this milking stool would just bend his leg when he wanted to sit down. The stool would come around to meet him. When he stood up, the stool would remain attached to his ankle, parallel to his foot. Carried this way, it would not interfere with normal walking

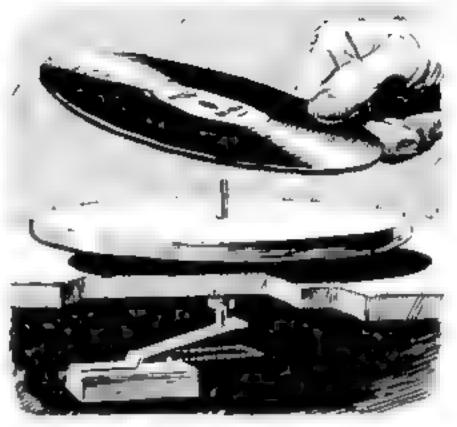


7 Sluicer to Chew Away Sand Bars. Costly dredging could be avoided with a sluicer that uses water power to level channel-blocking sand bars. Planks battened together form the rectangular plates shown. A row of plates, with weighted feet, is chained together and anchored on top of a

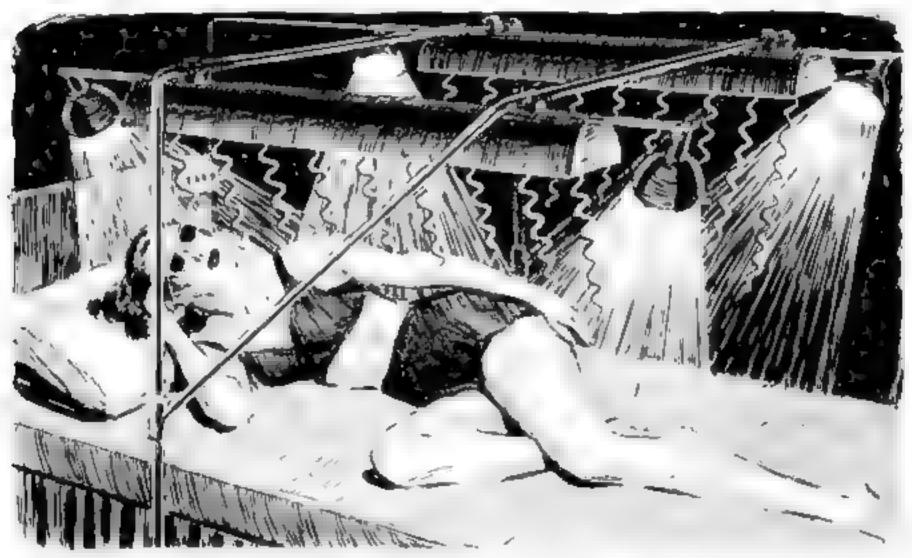
bar. As tides and current rock the plates, the sluicer sanks deeper and loosens and displaces the sand. The inventor reports that in a five-day trial a test model of the sluicer dug out a channel six feet deep, 40 feet wide and 200 feet long at the entrance to a New Jersey bay.



Most phone users would talk less if they could see their bills mount up. This device would both keep count of message units and remind a caller when to hang up. Dialing a number would advance the counter mechanism and start a timer which would then visibly tick off the minutes and call units.



9 Record Weight to Turn on Phonograph. You would not have to stop this phonograph motor when you wanted to change a record. Lifting the disk would do that job automatically. Putting a new record on would start it the same way. The weight of the record would press a plunger, opening or closing the motor circuit.



10 Heat Lamps to Replace Blankets. If bedcovers bother you, you might try this method of getting warmth without weight. Regulated sources of infrared or ultraviolet—minus the visible light—would keep you

comfortably warm regardless of the temperature outside. The inventor says these invisible light rays would help induce sleep and could also be used to give you a sun tan while you slept.

U.S. potents on these intentions have been granted to 1 Chapter Firtig Coungion, A). 2 Catl Statumer Son Francisco; 3. Fibram Enves, Elvin, Ohio; 6. Elmer Lee Minneapalis 5. Filliam Briscoe and I rear Berry Detroit & L. R. Binnester, Lake Placed R. 1.— Christopher Maningan, Ocean City, N.I., 8. Henry Francisco Brooklyn, 9 Gerald Cattena, New York; 16. Marray Clay, Chicago.

Famous photographer shows how

Practice 11's routine at the Keppler studio, With stage set, props in place, camera and lights adjusted, staff members—often in-**Pictures**

Vic Keppler's assistants model his test photos, with results that are useful-often funny.

CHEWING the mevatable cigar under his bushy mustache, New York photographer Victor Keppler will tell you that the gent-in-the-bathtub and the bride-with-rolled-up-trousers were not shot for laughs. Funny? Sure. But that's incidental. These are test photos, made to insure that the final pictures-ones advertisers write fat checks for-will turn out right.

It's routine at the Keppler studio, With cluding Keppler himself-stand in for models. The test is snapped and rushed through the processing lab. Then anything that looks wrong can be changed before the \$20-an-hour professional models arrive for the real thing.

Keppler thinks amateurs nught well copy his trick. It is not so simple with roll-film cameras. But if you want a good shot of a temperamental baby-or of equally temperamental Aunt Tillie on a visit-snapping a test roll a day or two in advance could be worthwhile.

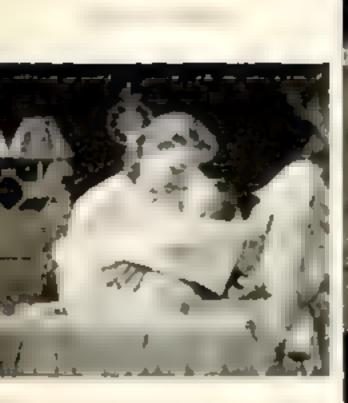




Test-shot model forgoes the bubbles-but he's got his clothes on.











In the brighter, airier, made-over Meredith, towels are force-dried in individual lockers.

Sailors Get More Elbow Room On a Redecorated Destroyer

NAVY hands who formerly shipped on the destroyer Meredith, a typical drudge of the Atlantic Fleet, wouldn't know the old girl today. Outwardly unchanged, below

BEFORE REDECORATING, Meredith had one wash basin per 16 men, no place for towels to dry.

decks she is a thoroughly altered vessel.

Colors—pale blue-green, gray, tan, coral, oxblood, dark blue and green—have been splashed over her bulkheads, furniture and decks. This makes her seem lively and inviting.

Fluorescent lighting has given her living quarters an air of cheerful brightness that they never had before.

Bunks have foam-rubber mattresses. New three-man gear lockers stand at the end of each tier of bunks, and beneath each bottom bunk are three sliding drawers for additional belongings. There's an occasional sofa, and even a piano.

Seats in the mess have backs, and the tables are less crowded than before. Hot food arrives by dumb-waiter, and odors depart by improved ventilation.

The Meredith will never be just like home, but the morale of her crew has shot sky-high since she became truly livable. Their increased efficiency enables her to get along with 37 fewer officers and men than she used to need.

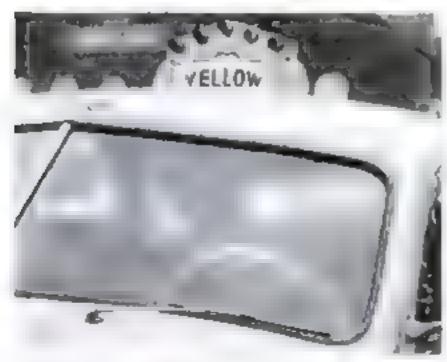
A two-year study of the Atlantic Fleet urges that all the Navy's vessels be made as "habitable" as the Meredith.



Black Widow Spins Web to Help Build Weapons for U.S. Army

THE black-widow spider above is a defense worker. Its web filaments are used by Northrop as cross hairs in microscopes and telescopes for Army tank sights. Tougher than steel, they are so fine that 5 000 of them laid side by side take up only an inch.

At left, the spider is having a health check in the plastic box where it lives between jobs. At right, it has climbed out on a stick and is about to be shaken loose. As the spider falls on its back to the floor, it will spin a six-foot strand.



Colored Lights Tattle Speed

FLASHING colored lights on the roof tell traffic officers, pedestrians and other drivers how fast the cab above is going. An automatic selector unit sends impulses from the transmission to the lights. Blue, orange, green, yellow and red lights mark each five rules from 25 to 50 m.p.h. From 50 to 70, red flashes in combination with the others. Inventor A. R. Johnson of Chicago plans models for cars, buses, trucks



Troops Ride in Armored Bus

This 10-ton monster will carry a dozen soldiers safely through a hail of small-arms fire and shell splinters. It's the six-wheel-drive Saracen, newest British personnel carrier. The vehicle carries a .30-caliber machine gun and a Bren gun.

►►► Movies of how the body fights disease are expected from a new way of keeping cells alive under a microscope inside an incubator. University of Pittsburgh scientists will add viruses, film results

New Aids to Living...

1. Whistling tea kettle fits over varioussized pots to boil water for tea while dinner cooks—all on one burner.





4. New soap holder mounts vertically on wall. Bar slips in at top, slides out at bottom when container is tilted forward.



5. To corral dust without mess, this basketlike fitting adapts older Electrolux cleaners to take disposable paper bags.



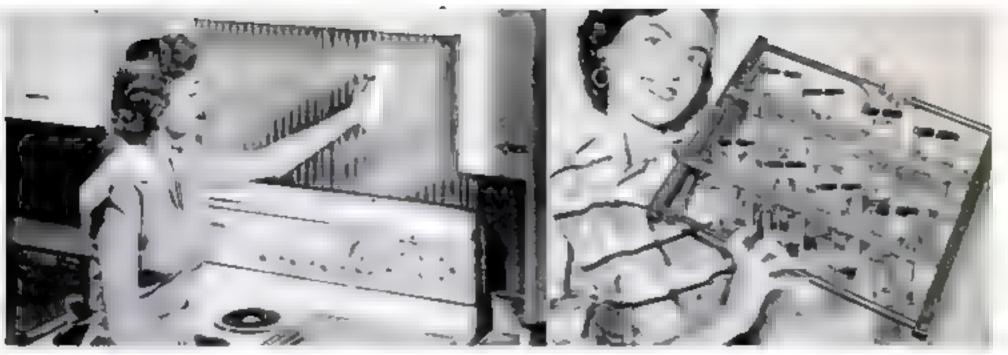
8. Stiding hooks on this rack zip back and forth so that kitchen tools or pots and pans of varying sizes can be hung without interfering with each other.



9. Record holder lets you sort and stack as many as 40 platters for an evening of music. Heavy black glass spindle has flock-covered plywood base.

10. Spill catchers of foil save a lot of scrubbing on an electric stove. These disks, precut to fit large and small burners, will save you seissor work, too.

Further information on these products can be obtained from: 1. H. F. Kutschbach. 24 Huebschung, Bad Grund/Horz, Germann, B.E.; 2. Phoenia Table Mat Cu., 1718 E. 75 St., Chicago, J. Reiber Cooter Co., Indianapous, 4. Craft Well Industries 2348 Grant St., Berkeley, Calif., 5. Facuum Popes Rag Scar Co., 1817 New Utrecht Are., Broadin VV., 6. Sherness Co., 43.6



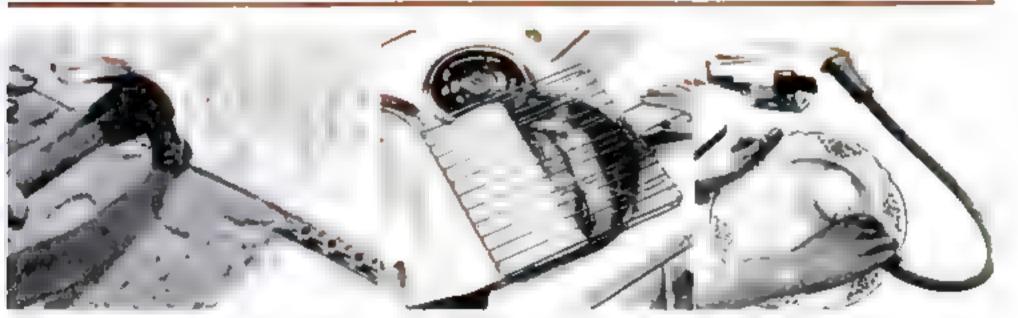
2. A swipe with a sponge wipes away grease and smoke when stainless-steel mats protect wallpaper behind the stove.

3. Drinks are on the level no matter how you tilt this tray. Pivoted holders in a swinging frame keep glasses upright



6. Guest closet in disguise extends four inches from wall when closed, opens to hold six coats. Lifted front checks hats

7. Sponge mop scrubs nine-inch-wide swath. Sliding metal sleeve forward on handle bends sponge in half to wring it dry



11. Rug binding is a cinch when you do it with a hammer instead of a needle Tapping the metal teeth on this textile edging clamps it over the carpet.

12. Skillet lid is a cakecooling rack with paper towel inserted. Also serves as a draining stand for fried foods. Insert foil instead and it's a broiling pan.

13. Hitch it to a tap and water pouring through this brush will scrub china and glasses in jigtime with no need for the dishwasher to soak her hands in water.

Nicollet Ava., Minneapolis; 7 Buff Products 200 Williams St., Port Chester, NY; 8. Gary Alea Industries, 1936 Milwaukee Ave., Chicago, 9 Keencraft, 106 Lincoln St., Medford, Ore; 18. Central States Paper & Buff Co., St. Louis; 11. Cyemba Sales Corp., 120 Wall St. NYC; 12 Every Wright Co., 420 Market St., San Francisco; 13. Quicki Products Co., Box 31 Sta. F. Toledo.

Scientists Probe Glaciers



for Tomorrow's Weather



From deep in Alaskan ice comes the forecast of a mild winter in 2053.

By Gardner Soule

IS THE Arctic getting warmer? Is the world? Was it ever warmer than it is now? Why are most of the world's glaciers shrinking?

And why has one fascinating glacier, on the Juneau Ice Field in Alaska, continued to advance while other glaciers, including those near it, have been shrinking?

These are deep questions, and scientists are boring deep holes into the ice to seek the answers. If such questions could be answered, weather predictions, not merely for tomorrow but also for centuries, might be made.

The mysterious, growing glacier in Alaska is called Taku. It has lengthened 3½ miles since 1900. The American Geographical Society, for the past six summers and one winter, has sent expeditions to study this glacier.

Reading the Future from the Past

As a glacier grows, it freezes into its layers of ice a record of hundreds of years of weather. By studying samples of ice from different layers, you can sometimes tell what happened long ago. And from the past, you may read the future.

Drills bore into Taku from towers

EXPLORER Wearing a white helmet, dark goggles and short-sleeved shirt, member of Taku glacier expedition cautiously prepares to descend into crevasse opened by the warm summer sun. The explorers found sunburn more of a hazard than frostbite, hardly ever caught cold.



FLYING SLED Albatrons flying hout is designed to open the Arctic. A long, narrow

runner under the holf lets it land and take off on snow or tee without wheels or skis. Plane can also operate from open water.

that look like oil derricks and bring up samples of ice from hundreds of feet down. The explorers dig 15-foot-deep pits into the ice, take more samples, then turn the pits into laboratories, work in them, and analyze ice crystals right on the spot. They also descend into the crevasses of the glacier.

This is new in exploration. Men in the past always have hurried to cross the crevasses as they tried to reach something like a mountaintop or the North Pole. Now men have learned that chasms contain secrets found nowhere else.

"It's a weird feeling," says Dr. Calvin J. Hensser, a 28-year-old Oregon State botamst, who has been on three of the trips to Taku. "It's a blue world down there, an ethereal blue, a phenomenal blue.

"It's very strange to be 50 feet down in this blue world, and to be looking up at the tiny slit above you."

Why should a botanist choose the Arctic as his field of exploration?

"I've found" Dr. Heusser says, "103

different flowering plants on the numataks (mountains and hills that stick out above the (ee).

"There are blueberries, grasses, buttercups, ferns. There are club mosses, which grow in chains like Christmas wreaths.

"There are dandehous and goldenrod and flowers of many colors. Up to the timber line, 3 500 feet, are the trees, alpine fir and mountain hemlock,"

Plants Flourish in the Arctic

Taku glacier, only 25 miles from Juneau is in the sub-Arctic. Yet because it rises to an altitude of 6 000 feet, it is Arctic in its conditions. Botanist Heusser therefore has observed plants living and flourishing in an Arctic environment.

Since 1945, the geographical society leas sent dozens of scientists to Taku—geographers, geologists, physicists, meteorologists, glaciologists (glacier experts), others. Backed or assisted by the Office of Naval Research, the Army, the Air Force, the U.S. Forest Service, the

Arctic Institute and other groups, the men have taken good, long, scientific looks at Taku.

Ever think of the Arctic as frigid, lifeless, white, silent?

It isn't.

Meteorologists took detailed weather records. In summer, the air temperature often reaches 70, at night it usually goes no lower than the 30s, and in winter it goes down only to the winter temperatures of the U. S. Midwest.

The men camped out for days on the ice with only a poncho under a rubber mattress. The only epidemic of colds came from visitors who arrived by plane from civilization and distributed their sneezes among the men on the glacier.

Everything from Bears to Hummingbirds

If the climate permits men to work and live, what of animals? Botanist Heusser is an ecologist—that is, he is concerned with animals and plants and their relation to each other. From the start his eyes were open for animals. Instead of only the occasional polar bear or seal that some explorers have reported, he has quite a story:

"I've seen the brown bear," he says. This is the biggest bear—11 feet long, over 1,000 pounds. "We've found his tracks as big as pie plates. The black bear is there, too. There are mountain goats on the mountains around the glacier. There are wolves, deer, wolverines, marmots (fur-bearing rodents of the ground-hog family), ptarmigans (heavy-feathered birds of the grouse family), snow buntings.

"I've even seen a hummingbird.

"Squirrels just like those in your yard

scamper across the ice.

"We're often harassed, out on the ice, by bushy-tailed wood rats that move into and live at our camps. They eat chocolate, oatmeal, crackers. Anything that's not canned."

Dr. Heusser learned too that the glacier itself was full of—of all things—insects. "Dozens of ice fleas are on the surface of the ice," he says. "Ice worms, too—tiny, wiry creatures. And spiders,



HISTORIANS Descending into erevasse, scientists trace weather of the past in layers of ice built up over many centuries.





PROPHETC Cores of ice taken from crevasse walls are studied for clues to long-range characte trends that may forecast weather of future.

too-you'll see half a dozen as you put down a tent."

Is the Arctic silent? The Taku Arctic was—except for the wind (howling), avalanches (thunder and crashing), the calls of birds and animals, the gushing of water in the crevasses, and a good many other sounds. The glacier itself, he says, moves downward by shocks, and you can even feel the glacier move when you're camped upon it.

Is the Arctic white? "Only," says Heusser, "when you're caught on the snow in a fog." There are the browns and grays

of the nunataks, the greens of the plants, and not even all the snow stays white. In snow cups, the round surface pockets caused by melting from the sun, there were one-celled plants called algae that turned the snow red.

"And the sunset is another thing that can turn the snow red," says Dr. Heusser. Sunsets are magnificent.

Harsh reds, oranges, blues, blacks-no pastels.

"It makes you feel all's right with the world, and is a big reason you go up there aside from scientific purposes."

At night the northern lights add more color—green, blue, silver.

What secrets has the ice itself yielded? Though the evidence is still preliminary, some things appear clear.

Long-Ronge Forecast: Warm and Dry

It was a very warm world, warmer and drier than now, about 3,500 years ago. Then there was a short ice age that started about the time of Christ. Then the ice started to recede about the time of the American Revolution. And it is receding still.

Ice, which still covers 10 percent of the earth's land surface, is dwindling.

"The trend," says Dr. Heusser, "is toward a warmer, drier chmate."

Predictions: If this trend continues, ports that are icebound will open. Other northern ports will become ice-free for longer periods. Winters will get warmer, summers hotter. Some torrid places, in the tropics or on deserts elsewhere, will dry up so much that they will become uninhabitable.

All of these things the American

All of these things, the American Geographical Society points out, have occurred somewhere on earth during the past few years.

And man, knowing that he is right in the midst of a period of chmate change,

is for the first time actually studying the change and learning what is going to occur as a result.

But there are mysteries still to be solved.

Taku and one of its neighbors, Norris glacier, reach an inlet of the Pacific, less than a mile apart. In this time of gradually warming weather, Norris, as would be expected, is receding; its ice and

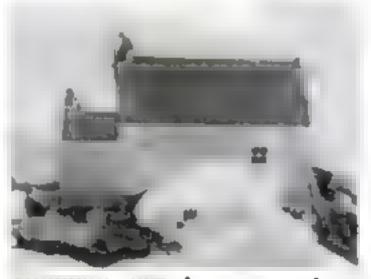
snow are less each year and Norris is drawing back up toward the mountains and away from the ocean.

Taku, on the other hand, shrank (as it should have) till about 1900, but then switched and has been advancing ever since. Today it pushes into the Pacific icebergs as big as office buildings. Why should this be so? With the same warming weather, and identical climate conditions because they're right next to each other, how come one glacier is getting bigger while the other melts?

Are Taku, and the very few other glaciers known to be growing, simply misbehaving in this world-wide period of increasing hot weather? Or is Taku—could it be—an indication that the world is about to reverse itself and start cooling off?

So far the dozens of scientists who have tried to figure it out can say only:
"We don't know."

END



ALUMINUM HUT kept researchers comfortable on Taku all winter. Walls are layers of aluminum, tar paper, glass fiber and wallboard.



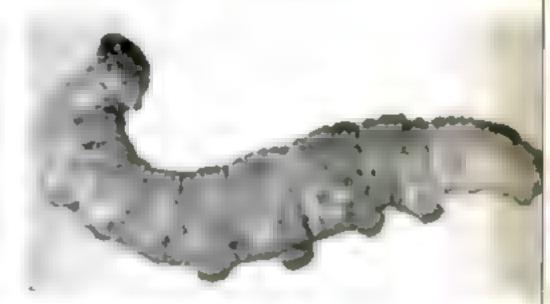
Basketwork Roller Rebuilds Roads Right on the Spot

THE odd-looking roller above makes new roads out of old ones. First it crushes an old bituminous surface into re-usable aggregate right on the road. Then the aggregate is bladed aside while the roller compacts the base for a new surface. This is made by mixing fresh binder oil with the old aggregate—and turning the roller loose a

third time to roll the mix level. Made by the Hyster Co., of Portland, Ore., the Grid Roller consists of interwoven 1%-inch steel bars and can be weighted to produce pressures near 1,500 pounds a square inch at its small contact points. At left above is a loosened road surface after one pass by the roller; at right, after four passes.

Caterpillar is Older Than Man

It's been a long time since the caterpillar at right munched a leaf—25,000,000 years. Every wrinkle is there, but the insect is solid stone, fossilized during Miocene times when man was still evolving from a primitive ancestor. It's part of a rare find of perfectly preserved fossil insects made in Kenya, Africa, including beetles, ticks, worms, spiders and grasshoppers.

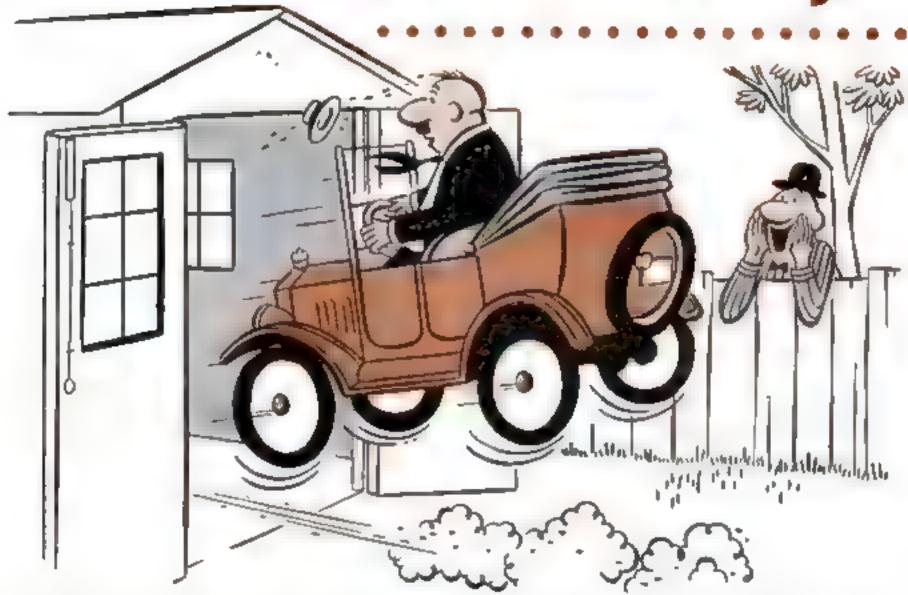




Mulli-in Tape Opens Heavy Cartons Like Pack of Cigarettes

Just pull the tape, as shown above, and a sturdy carton splits apart. The filament tape comes laminated to the fiberboard and an end is left sticking out of a corner joint when the box is made up. A product of the Minnesota Mining & Manufacturing Co., the tape is strong enough to rip apart a box with 350 pounds' bursting strength.

Grand Champion Model T Story



IN APRIL, 1922, my father got to feeling his oats, and decided to spend his money for something profitable. After much persuasion by his boys—there were seven of us—he decided to invest in a car.

He had always said that if he bought a car, it would be a Ford. He went to see the dealer that afternoon about purchasing a Model T touring car. He paid cash for the car, and the dealer took him out and demonstrated it. When Father came back, he was well versed in the art of driving, and told us to get in. We climbed in and Father started off.

Father drove right home, for he was anxious to show it off to his neighbors. He got home the same time that Herb,

flerb saw Father come down the road at a faster than safe speed and turn into the driveway. He drove into the garage with a very dignified look, which was to be quickly deflated. He no sooner got into the garage than he hit the wall. In his excitement, he stepped on what he thought was the brake, but it turned out to be the reverse pedal. The car bolted back out of the garage faster than it had gone in.

"Ha, ha, ha!" laughed Herb. "Why didn't you leave it in the garage?"

"Well," said Father excitedly, "why didn't you shut the door while I had it in?"—Andrew Piper, Caldwell, Idaho.

Idaho man wins 1925 Ford with his tale of a Tin Lizzie with a mind of her own.

O'N THE opposite page is the best-in the judges' opinion-of nearly 3,000 stories which were sent in by readers of Popular Science Monthly about "My Funniest Experience with a Model T Ford."

The writer, who thus wins PSM's reconditioned Model T, is Andrew Piper, a 40-year-old Caldwell, Idaho, farmer. An old hand with Model Ts, Mr. Piper drove a 1926 Ford as his family car until four years ago. Now he drives a '51 Plymouth—which he plans to keep, he says, using his "new" Ford, a 1925 runabout, "just for fun." He and his oldest son, 15, intend to join an antique-car club with it.

Judges Also Liked These Model T Stories

IN 1926 I was living in a small village in the north of England and owned a 1925 Model T. The local magistrate was also a proud owner of the same model. Naturally, we both took a lot of ribbing.

One day I stopped at the barber's on Main Street and got out of the car, leaving my dog sitting inside. Seeing a bunch of my friends, including the magistrate, outside the general store about 30 feet away, I walked over to them and got a lot of ribbing from one who owned a pony and trap.

I said, "My Lizzie can do anything

your pony can do."

"I would like to see it come to you

when you whistle," he said.

With that, I turned around and gave a shrill whistle. Imagine my surprise to hear the car start up and come bucking towards us, conking out about six feet away.

I knew what had happened. My dog, hearing my whistle, had jumped toward the dashboard and somehow knocked the switch on. The car was very hot, and it started up, as all Fords could do in those days. I also used to leave it in high gear, as the brakes were not too good.

The magistrate gave me a summons. The charges were: letting an unlicensed person drive, allowing the car to be dangerously driven, and damaging public property. (It broke down a sapling in its headlong dash)

The magistrate was as much puzzled as the rest of them, and came over to my house that night. He said, "I will have to fine you 30 shillings in the morning, but I'll pay the fine for you if you teach me that trick."

After swearing him to secrecy, I explained what I thought had happened, and he, being a good sport, paid my fine.

As far as I know, those people are still talking about the car and guessing how I performed the trick.—Samuel Slenn, Philadelphia



BACK in 1929, my dad and I were driving down a country road in our 1925 Model T. We ran over a rooster, which had run across the road in front of us. We noted a farmhouse sitting back from the road about a quarter of a mile, so we turned around and drove over to-

ward it. A lady came out as we drove up. My dad climbed out of the Model T, carrying the dead rooster with him.

He said, "Lady, we ran over your

rooster and want to pay for him."

The farm lady looked our Model T over carefully and said slowly, "Aw, that's all right, Mister. If he couldn't outrun that car, he couldn't catch a hen anyway."—Steve Thomas, Crane, Tex.



N 1938, I was working for Burns' Grocery & Market in St. Jo, Texas, as delivery boy and clerk. For a delivery truck, Mr. Burns had a Model T Ford pickup, formerly owned by his father. It had been given excellent care.

On Saturdays, which were always very busy days, I worked in the store all afternoon until the rush was over. Then, around 5 o'clock, I started making my deliveries. On one particular Saturday, I loaded up the Model T with bushel baskets of groceries and started my rounds. I stopped first at the City Cafe for a coke and a little chat with the waitress. After finishing the coke, I got back in the Ford and went to my first delivery stop. To my consternation, I found there were no groceries in the truck. I hurried back to the store to report the theft.

There were several neighboring businessmen standing around the cash register with Mr. Burns when I returned. I did not stop to think that this was rather unusual for that time of day. The other men's being there made the situation more embarrassing, but, due to the seriousness of the loss involved, I blurted out the story to the boss on the spot, being

very upset and almost in tears.

He told me quite sarcastically that if I rushed around the store like I rushed when I drove the delivery truck, he would be very proud of me. He then informed me that when I left the store, I had started off so fast that I ran the Model T out from under the entire load of groceries.—James M. Bellah, Albuquerque, N. M.

Y DAD had a trick steering wheel on his Model T Ford sedan, I which I was warned to lock whenever I parked it. Locking separated the wheel from the steering column. Once, when I was 14, I drove this Model Tout into the country looking for a place to fish. I parked on the shoulder of a narrow dirt road and climbed the fence to inspect a stream in the pasture. It looked unpromising, so I decided to drive on. I started out carefully but I had forgotten to unlock the steering wheel. The sedan rolled helplessly into a barbedwire fence along the road and wedged a door handle tightly under one of the wires.

I reached under the back seat and pulled out a pair of wire cutters. At the same instant, an angry farmer appeared from nowhere. He wouldn't let me cut his fence. In fact, he didn't care for any of my juvenile ideas, me or my Ford. Not knowing what else to do, I unlocked the steering wheel, started the motor and tried to move. The barbs on the fence allowed me to move a total of four inches in either direction and sawed into the shiny black enamel. It was hopeless. I had to think of some way out if ever I wanted to drive Dad's Model T again.

I dug around in the tools and took out the jack. My farmer friend watched me. Carefully I put the jack between the taut barbed wires, pumped the lever and pried the fence free from the door handle. It was easy now. I got in, jammed my foot on the center (reverse) pedal and roared backwards—out of control. In my haste to get away, I wedged my foot in the center of the famous pedal trio, under the low and brake pedals. I stalled when I hit the fence on the opposite side of the road. Silently my farmer pal removed the jack from his barbed-wire fence and tossed it over to me.

"Jones won't let you cut his fence, either," he called.-Harold S. Zimmer-

mann, Whittier, Calif.

YSTORY about the Model T goes back thirty-five years, to the spring of 1918, when I was experiencing my first year as a garage mechanic in a Ford agency and shop.

I was overhauling the differential assembly on a 1913 T one night and my lack of experience caused me to slap that axle in with the ring gear against the right-hand side of the housing.

When the driver and his family came in for the car, I climbed under the wheel, took careful aim through the rather narrow doorway behind me, and as I jammed down on the reverse pedal, the thing took off—yeah, forwards. Straight into a group of oil barrels, it dove, tipping one of them over—the full one without any bungs in it. Was my face red! This family had to entertain themselves while I turned that Model T axle around.

Later, when the big shots of our little hamlet decided to put on their annual grain festival celebration, they promoted an auto race, to be driven in reverse, on the full length of Main Street (about three blocks). An auto race at that time meant, of course, a Ford race.

Remembering my previous reverse experience, I got busy and turned my Model T axle around—debberately, this time.

On the day of the locally famous race, I unobtrusively slipped up to the starting line, forward on the reverse pedal, thoroughly enjoying in advance the surprise and chagrin of my fellow race drivers when I threw my reversed Ford into high gear and hit that finish line in no time.

However, it did not work out that way. I had failed to take into consideration the eccentricities of my Ford. For the first block of the race, I did lead the proces-

sion. Then I hit the intersection, which consisted of a sharp raise for the crosswalk. My speed was too fast to control the jackknife tendencies of my Ford, and I suddenly veered off into the street at right angles to the course. By the time I got squared around to re-enter the race, the tortoises of this race (my original idea) were leaving me no room to safely do so, and they plodded on to the finish with me bringing up the rear.—C. G. Leite, Minot, N. D.



I'll never forget my most amusing experience with a Model T Ford. I was eight years old and taking a ride with my aunt and uncle along Route 9W, atop the Palisades in New Jersey.

It came time to go home, and we started to descend the long, steep and winding road to the Dyckman Street ferry toll booth at the foot of the cliff. Halfway down, the brakes started to give way. My uncle kept the car under control, and as we neared the toll booth my aunt leaned far out of the window, wavmg a dollar bill. As we passed the booth, she shouted, "We'll be right back." Just ahead of the ferry entrance was a crude traffic circle. We coasted around three or four times and finally came to a stop in front of the booth. By this time a considerable number of spectators had gathered to stare aghast at a car apparently going aimlessly in circles with a woman waving a dollar bill out the window.-Raymond Smart, New York City.





Family Rides Own Cable Car

IT TAKES nerve to ride this cable car from a river bottom to the top of a 400-foot-high bluff. But Albert C Urie and his family ride it daily—whenever they leave their home at the bottom of a canyon near Filer. Idaho. Urie used 3,500 feet of cable to build the hanging road. To haul the car to the top, the cable is hitched to a jeep which then backs up 500 feet on the canyon floor. The car makes the descent on its own in less than 60 seconds.



150 POPULAR SCIENCE



Bomb Bay Spins Open

A NEW revolving door on the bomb bay is expected to allow 600-m.p.h. Air Force bombers to fly at full speed during bombing runs. The present door drops open, leaving a gaping hole—and the plane must slow down or risk being buffeted by air gusts which may homee the bombs out of their racks. The new door leaves no opening in the fuselage except for a few seconds while it is being rotated.

A curved shell, it can be loaded apart from the plane, fitted quickly into place with the bombs inside the belly. At the target, the door spins over rapidly so that the bombs are outside, ready to be dropped (above). To keep the bombs from "tumbling" as they fall, a frequent mishap in high-speed drops, the door is fitted with two air-actuated plungers that kick each bomb off in its normal dropping position. The new bomb-bay door was developed by the Glenn L. Martin Co.

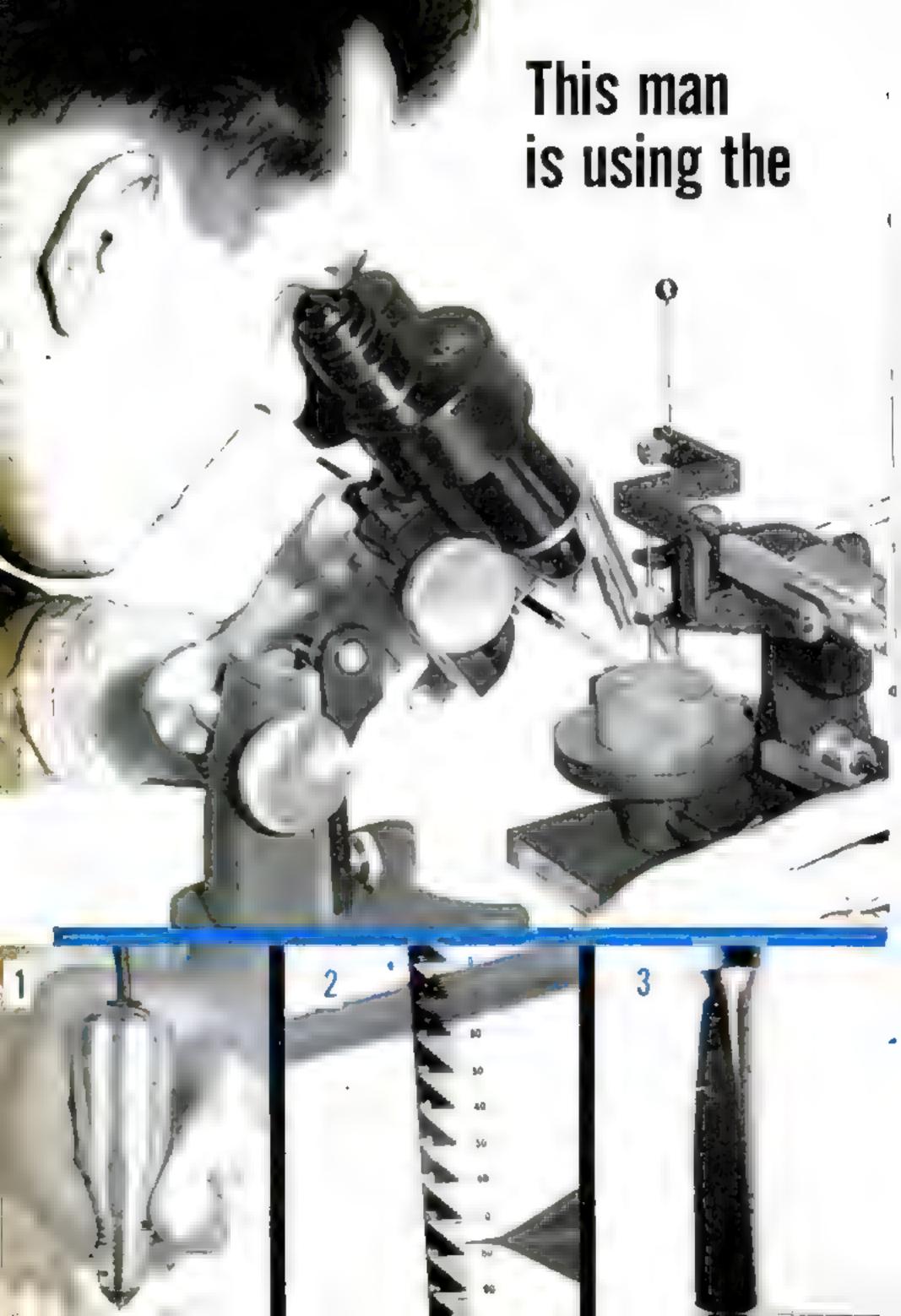


the new rotary door can carry rockets, too.

Sturdy Tractor Radio Lets Farmer Listen as He Rides

EVEN a stream of water in the puss can't laze this new tractor radio, says forestone. The extra-fine wire mesh covering the grille is flocked so that it is dustproof and water-proof to withstand outdoor life on a farm. A rubber-cushion mounting system, similar to that used for delicate instruments on aircraft, helps the eight-tube set withstand shocks and jolts. The radio is specially ventifiated to permit the free flow of air while keeping out dust. The cone speaker is impervious to dampness





World's Smallest Drills

John Cupler started making drills 1/20 the diameter of a human hair because nobody else could.



l'INY CUPLER DRIU, for use in hand tool is pictured in first punel ut left. Big. burkke shadow in microphotograph is a human hair. Compare it with size of drill tip below it. Tip must be given flats and points before it is complete. This is an enlarged view of pivot-type drill, the only kind the factory turns out. Twist drills, with spiral flutings, are useless for microscopic boring because they cannot stand the torque. Biggest standard drill Cupler makes is 123 1.000 inch. Extreme simplicity of company's driling mechanism permits even novices to bore holes of 1/1,000 inch to very close tolerances.

By John F. Stearns

JOHN CUPLER is a pleasant guy who figures there is nothing unusual about carving the Lord's Prayer on the head of a pin. You see, Cupler makes metal drills 1/20 as thick as a human hair.

His drills are the world's smallest. They're also the fastest. He has turned them as high as 500,000 revolutions a minute, but for everyday use he contents himself with a little over 400,000 revs.

Cupler has built a big business out of smallness. The holes in his jet nozzles for diesel fuel-injection systems have to be tiny to vaporize the fuel. His spinner-ettes for making synthetic thread are flat disks pierced with microscopic holes through which flow the gossamers of nylon, Orlon and Dacron. His drills bore those holes in the works of wrist watches that have to be looked at through a jewel-er's eyepiece.

For years diesel-engine manufacturers had been using nozzles like those on garden hoses. They atomized the fuel by shooting it through a big hole containing a centered diffuser shaft. It wasn't efficient, but the thing was easy to make. Cupler, born with an income-tax man's passion for exactness, was outraged.

He was pretty sure—in fact, he knew—he could drill precise, microscopic holes in diesel nozzles. A few years before, he had quit law school to go to work for a rayon manufacturer. There he had learned how to make drills 5/1,000 of an inch in diameter for spinnerettes.

The drills were turned out with agoniz-

ing slowness. Worse, only a tiny percentage of them worked at all, and the few that did wore out or broke at a tender age.

Cupler had done preliminary research in a home laboratory and workshop—his own bedroom—in Cumberland, Md

General Motors, seeking better diesel nozzles, was one of his first customers. Cupler took on the drilling job. His workshop, by then, had overflowed into the basement and seeped into the garage. He called it the National Jet Co.

Holes Are Too Tiny

He did the job all right. He did it too well. The holes were too small. They got plugged up during further processing at assembly plants. So GM asked him to make drills for their own use.

Cupler chuckles when he recalls it.

"They wanted 60 gross of drills to start with," he says. "My grandfather, who was backing me, and I couldn't calculate an asking price, any more than we could imagine making that many drills.

"We finally suggested eight cents apiece. The GM people just laughed. They offered 70 cents apiece to start,

and later raised that."

GM then took the next step, asking Cupler to go to Detroit and help design machines that could take full advantage of his precision drills. He did. One of his earliest patents is for the complex machine he designed, with GM engineers, to put multiple holes in diesel nozzles automatically

But the high-precision microdrilling wasn't precise enough for Cupler. As his business grew and he moved into a two-story factory in downtown Cumberland plus a structure next door, he chafed at the faults in his own machines.

"There's no such thing as a perfect mechanical chuck," is one of his sayings. Yet he had to depend on mechanical chucks to grip drills during their manufacture and to hold them while they did their work. Any tiny inaccuracy in a chuck is transmitted to the drill, and inaccuracies can get tremendous when a drill is 1/1,000 of an inch in diameter—or less. Cupler's smallest drill, today, measures 25/100,000. That's one-tenth as thick as one page of this magazine.

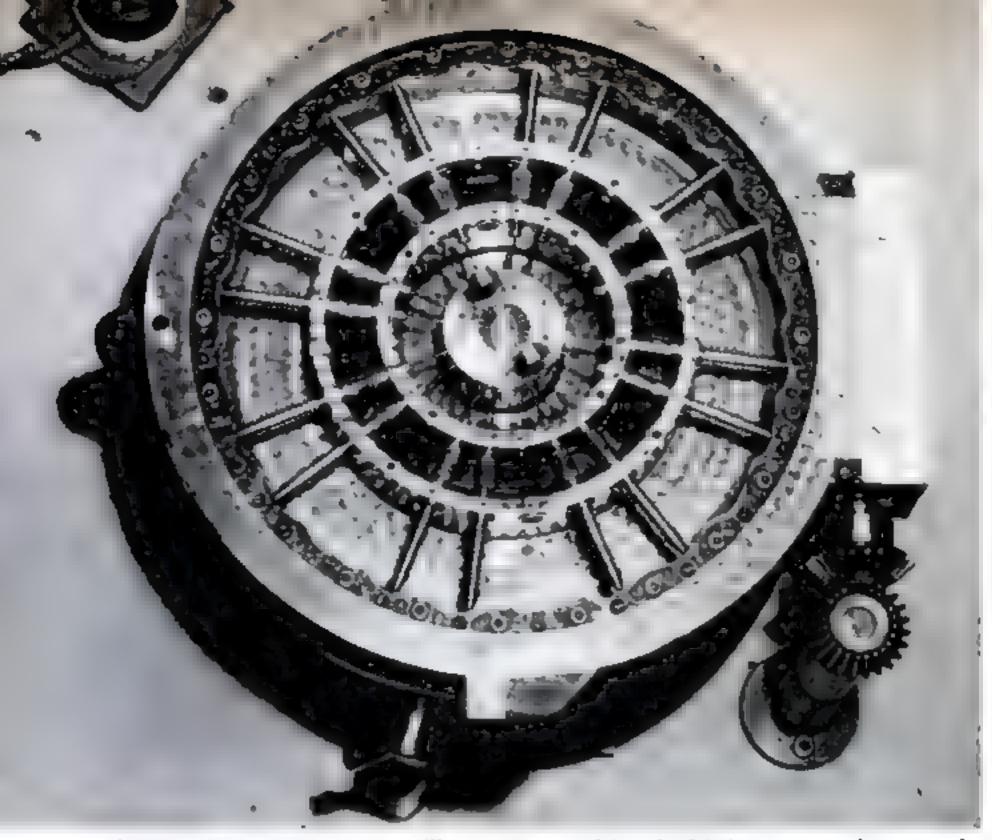
Even with near-perfect chucks. Cupler had to go to fantastic lengths to insure precision. One protective device was a refrigerated oil-cooling system to lessen thermal "creep"—distention of metal parts by heat. So cooled, a drill press could be used for a couple of hours at a time before the accumulated frictional heat got excessive.

Cupler felt not only that he could do a better job of precision drilling but also



Va IN JEWELED V-BLOCK drilling machine are indicated by arrows. Since shaft of drill is its own axle and axis, imperfections of a mechanical chuck are avoided.

a microscope made from odds and ends at a cost of \$200. It proved better than a \$4,500 commercial microscope he couldn't afford.



curter's RADIAL MULTIPLE DRILL will put up to 24 holes in a single workpiece (such as clock balance wheels) simultaneously. Drills

are driven by friction motor and are spun by came on ring just inside outer wall. Rig also uses Y-block principle.

that he could build a microdrill that would run all day every day.

He did both. He thought of using a V block as a bearing to support his drills without a chuck. This permitted the making of drills that were truly concentric throughout, and gave him a drilling machine that worked to extremely minute tolerances.

Drill Is Its Own Ayle

The V block is actually two V-shaped notches in a bearing block. To make a drill point, the two Vs support a steel shaft so that it rotates on its own circumference while being shaped and finished. In a drilling machine, the drill shaft fits into the Vs in the same way. Since the drill is always its own axle, so to speak, it can't be anything but true.

Vibration, another bugaboo of micro-

drilling, is banished by mounting the motor drive separately. The drive belt, a piece of fishing line, encircles a small pulley keyed onto the drill shaft between the two Vs. It transmits power, holds the drill shaft in the Vs and "floats" the drill above the workpiece, all at once.

Up to now, Swiss hand-craftsmen have had a practical monopoly on the manufacture of jewel bearings, a critical requirement of modern technology. But Cupler has recently designed an ultrahigh-speed machine which he regards as the key to their mass production. It whirls a tiny drill, at speeds up to 411,000 r.p.m., to put holes in jewel bearings for watches, scientific instruments and the like.

With the drill point spinning in a diamond-dust compound, it grinds through a tiny, crystal-hard gem in about half a minute.



Drivers Test Crash Belts Without Crashing into Anything

The car above has just "crashed" at 25 a pl without by my anything. The guidant k was worked out at the University of Carl tori a at Los Argel's tassa has much say ty there is no a safety best. As the car took off an

striked a ross to road Cherri blocks two
at characteristic contact word blocks two
200 ar and singlish of the class and
the decision of carrier stops



2 The car shuddered to a half to 6 of with the form of a first term of a first term of a first term of the control of the cont

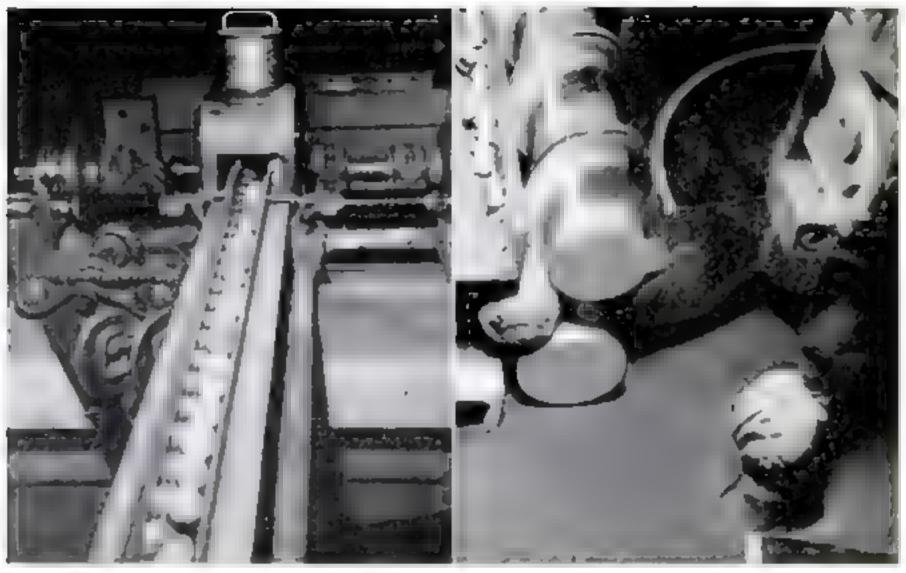
3 Safest for driver, says ICIA is not be with the said of the Back of the said of the belt. (Kids were not in ear during test

More Light for Night Drivers

More than half the light from the mercury-vapor street lamp at right bathes the roadway. The reflector, designed by West inghouse, angles two beams so they put 20 percent more light where it will do the most good. Refractors control side lighting

Police now can nab speeders with pictures. A camera on a police car is lined up on a fixed object across the road. Two snaps of the passing car, taken 1/17 second apart, put the evidence on film. Sargent & Greenleaf, Inc., makes the traffic camera.





Man-Made Lightning Bolt Harnessed to a Job-Cracking Walnuts

Nur packers have found that a 65,000-volt, 5,000-ampere jolt of electricity will take the shell off a walnut clean as a whistle. The kernels are undamaged, and production per worker is more than doubled.

The nuts are fed from 10,000-pound storage bins onto threaded rolls that carry them into a metal-shielded concrete building. This houses 18 cracking units (above left) in two banks of nine each. Dropping one at a time from the rolls, the nuts are grasped by movable electrodes (above right) and

held for an instant while the big bolt shatters the shells. Then meats and shells drop into an underground conveyor that carries them to be sorted and packed.

Because of the high voltage, the room shielding is carefully grounded and the discharged current is carried deep into the ground by heavy rods. The electronic cracker was developed by the Northwest Nut Growers, Portland, Oregon, Packers hope to design similar crackers for other nuts, such as almonds and filberts.



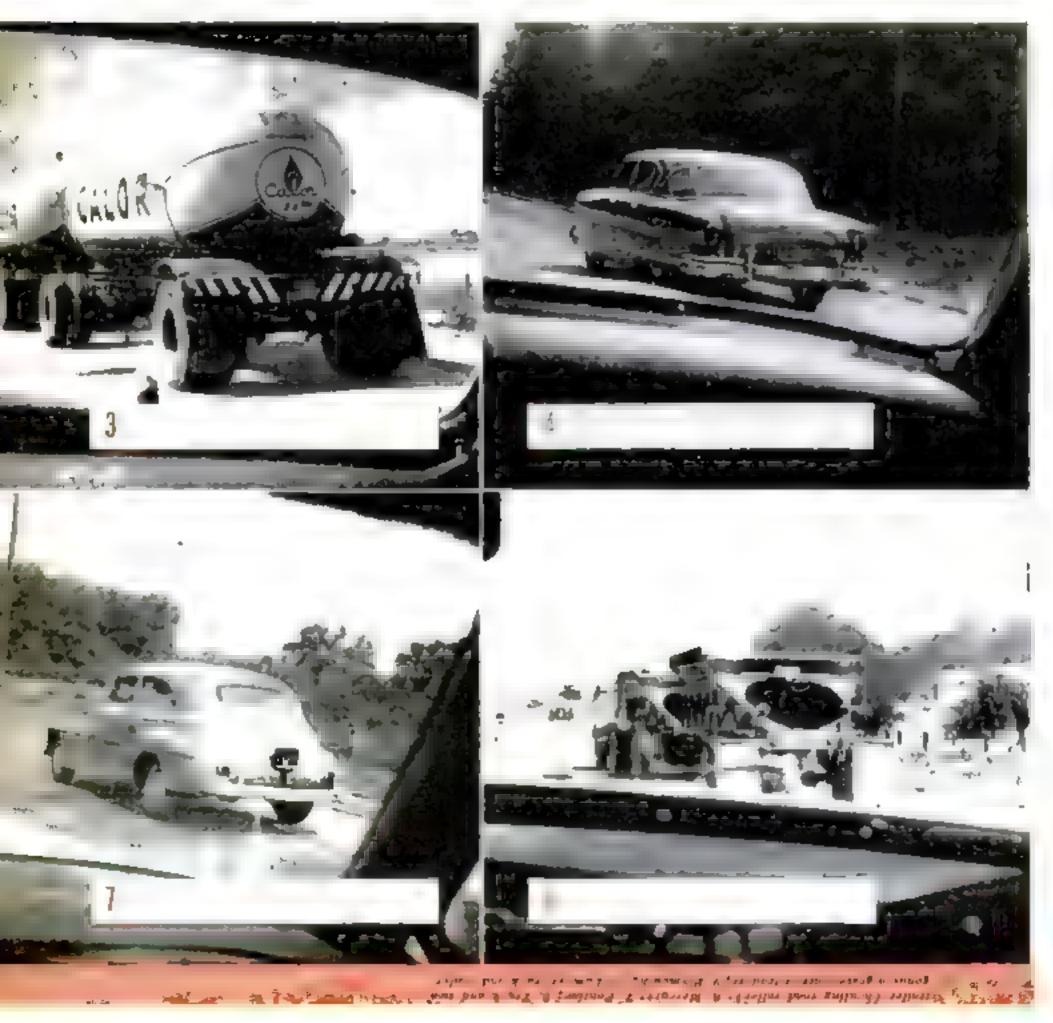
Slippers and Mitts Have Electric Heaters Built Right In

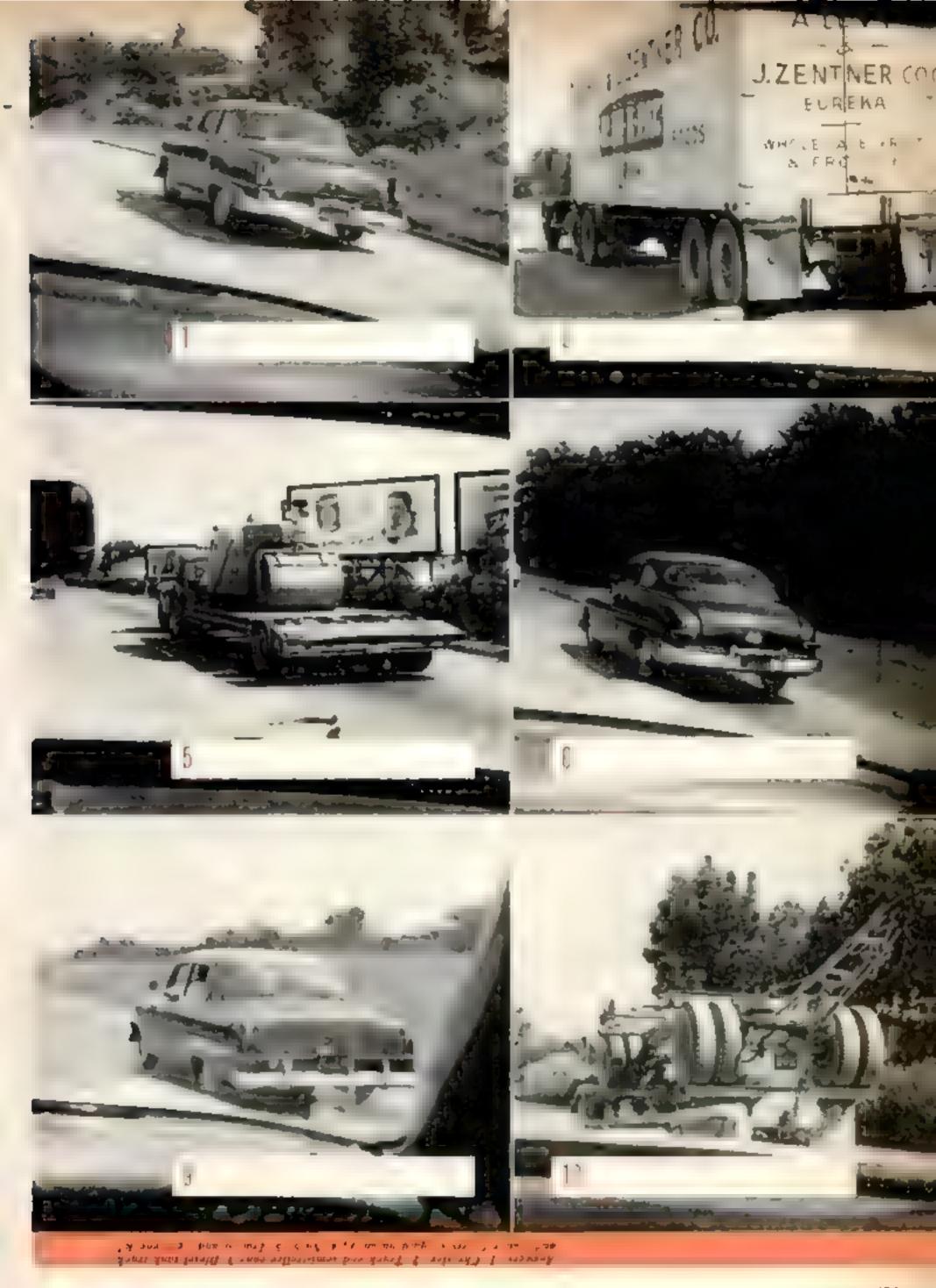
Cold feet after a day of skiing, hunting or outdoor work warm up fast when shoved into these electrically heated slippers (above left). They and the mitts (right) are also said to provide soothing heat for such ailments as arthritis. Both can be used in bed. Dimensional Products, 166 Second Ave., NYC, sells them.

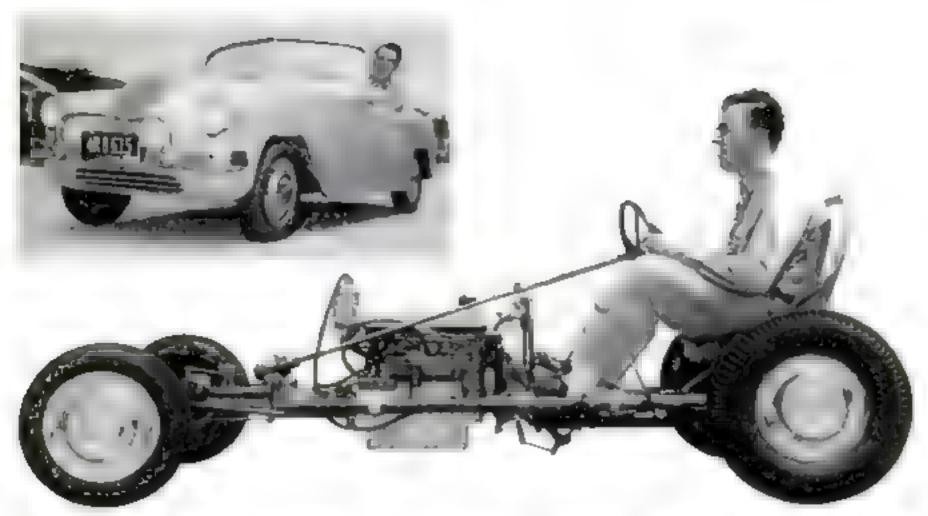
What Are You Passing Now?

You can name at a glance most of the cars you meet on the highway. But glumpsed from behind, as you swing out to pass them, they're not quite so easy to tack off. And trucks are even tougher.

See how many you can recognize that way in the pictures on these pages. Identify the cars by make, the trucks by type. Then check with the answers printed upside down at the bottom.







These Little Old Crosleys, They Ain't What They Used to Be

CROSLEYS may be the Orphan Annies of the auto world, but they still have some sugar daddies. Take for instance the two Crosleys, above, that Nick Brajevich of Los Angeles has lovingly rebuilt.

Brajevich is proudest of his little skeleton. A red-hot dragster, it's little more than a '50 Crosley engine mounted on two straight lengths of chrome-moly tubing. He has upped the displacement 3.52 inches by reboring the cylinders: the 2.25-meh stock crankshaft stroke remains the same. The breathing capacity has been improved by grinding and polishing the intake and ex-

haust ports and passages within the block. Alcohol, atomized by two carburetors, drives the engine 8,200 revolutions a minute.

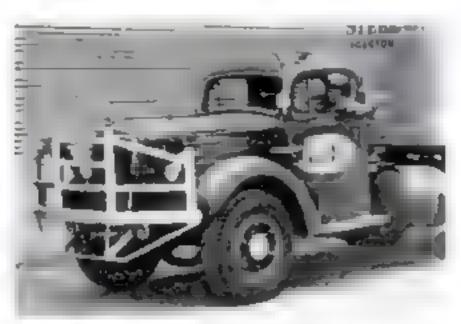
Result? The baby has hit 97 m.p.h. on the quarter-mile drag strip at Santa Ana.

Brajevich's fancy sportster (above left) got its start in life as a '49 Crosley Hot Shot. Frenched headlights flank a grille of Nick's own design. The air scoop is from a '48 Merc. Cushioned seats have replaced the Crosley buckets and the flexible-steel steering wheel, taken from a midget, is wrapped in two-color plastic. The interior is maroon and cream.



Calling Dick Tracy . . .

He's not admiring his new wrist watch—he's making a radio broadcast. The disk strapped to his wrist is a complete transmitter. Sylvania built it to show what can be done with transistors, the tiny elements that do the work of radio tubes.



Git Along, Little Dogies!

Down in Texas they've had to put cowcatchers on trucks to keep stray steers from tangling with the radiator. The cowcatchers also help if the deer and the antelope do their playing too close to one of the Lone Star State's superhighways.

Id like to see them make...

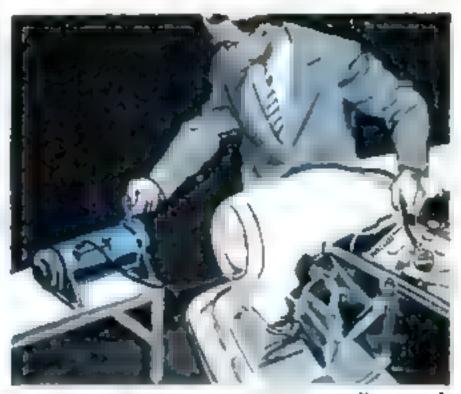
Everyone has his even put Idea of some godget he would like to see in general use. What is YOURS? Popular Science Monthly will pay \$5.00 for each one published. Use government pastcords only Contributions connet be acknowledged or returned.



AN UNGROUNDED BATHROOM OUTLET fed by an isolation transformer to separate it from the house line, thus climinating most bathroom shock hazards.—R alter Beglen, Pittsburgh.



AN EGG STATER with a rubber suction cup on the bottom to prevent it from skidding all over the bowl when you put on the pressure. —Mrs. Mary Lauto, Brooklyn, N. 1.



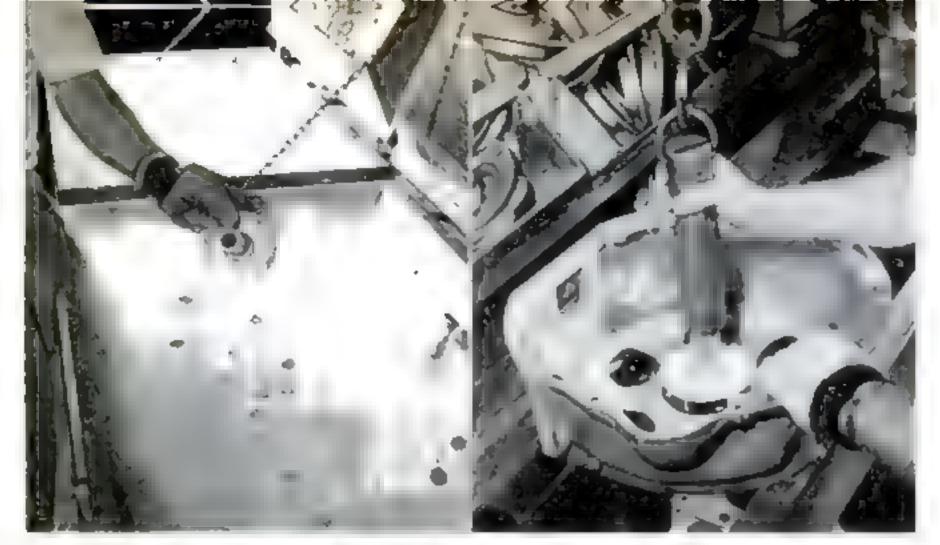
A HAND-OPERATED GENERATOR small enough to store in the garage but strong enough to beef up a weak battery to start a car.—R. L. H atkins, Cincinnati.



A RATCHET for safe combinations to drown out the sound of the fulling tumblers and thus stymic sufe-crackers who do their stuff by ear.—Carl Ayars. Bridgeton. N. J.



BABY HIGH CHAIRS with a drawer that slides out from under the seat to hold bibs, diapers, cleansing tissues and small toys.—Mrs. S. Milazzo, Cincinnati.



Deep Freeze of Auto Parts Helps Make Perfect Fits

Some workers along Plymouth assembly lines have a handy place to chill a bottle of pop. They just stick it into their parts cold calanct, left above, for a minute. The cabinet's real job is to shrink key auto parts so they ship into place without the risk of shearing bits of metal in a force fit. As the

metal warms and expands the part is locked in. Left, a reaction shaft for Hy-Drive is pulled from a dry-ice cabinet where it has shrunk .002 inch to fit, right, into a torqueconverter housing. Exhaust-valve seat inserts are chilled with hauid nitrogen to 320° below zero Fahrenheit.



Radio Makes Model Do Tricks

This radio-controlled model of an amphibious jeep will do everything but roll over and play dead. On command from its master, 250 feet away, it will run forward, back, turn, blow a horn or siren, or fire blank cartridges. It won 15-year-old Don Trumbull, of Milford, Conn., an award in Ford's 1953 Industrial Arts competition.



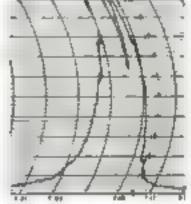
Plastic Trap Poisons Mice

The plastic bart station above feeds porcon to mice automatically. The cereal-type bait a slow-acting anticoagulant, feeds down to a hidden pan, exposing a little at a time. The hood and small entrance holes appeal to a mouse's instruct to hide while feeding, keep out larger animals. Motomeo Inc. markets it.

An Atomic Dragon's Eerie Funeral



When Canadian scientists hauled away the corpse of a reactor that went berserk, radiation charts in the buildings that it passed shot up like this



By Bill Bantey

THIS is the story of a funeral—the strangest funeral in the history of man. The coffin was a huge canvas bag. The hearse was a towing grader and the grave, a giant hole. Atomic scientists from the U.S. and Canada were the mourners.

The corpse was Calandria, largest and most dangerous radioactive object that has ever been handled. Experts say the radioactivity of this 2%-ton aluminum tank, which was the heart of a great nuclear reactor, equals that of about half of the radium ever mined in the world.

Calandria operated for five years—a longer life than generally predicted for such a heavy-water, natural-uranium reactor—at the Chalk River, Ont., site of Canada's atomic energy plant. Then, last December 12, alarms sounded throughout the reactor building.

Sensitive monitoring instruments had detected a burst of radioactivity in the 200-foot stack of the isotope-producing NRX reactor, world's most intense source of neutrons. Within its core—the aluminum tank that technicians call a calandria—several tubes containing uranium rods



USING SCALE MODEL of reactor, 70-man team practices removing aluminum Calandria. Crane operator, holding wooden miniature of it, rehearses plan of handling it with ropes.

had burst, contaminating the reactor and putting it out of action.

A siren wailed and, all over the plant, personnel quit their posts in a well-understood evacuation procedure. Only senior officers remained, to supervise a survey of the radioactive contamination that had fallen upon the project grounds, and to assess the damage to the reactor.

The radioactivity strewn over the plant was not enough to constitute a health menace, but could upset delicate experiments if tracked about, Radiation Haz-

ards Control Branch experts found.

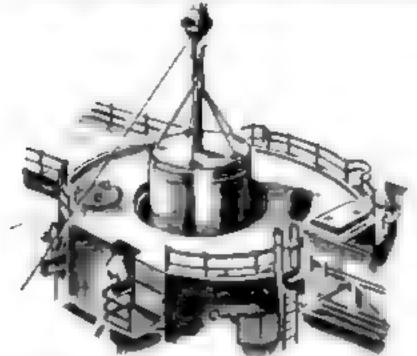
Under direction of Gordon W. Hatfield, the plant's manager of Industrial
Operations, and the staff, a "restoration
program" of decontaminating the area
and overhauling the reactor began. The
No. 1 Radiation Detection Unit of the
Canadian Army, and the Royal Canadian
Air Force, contributed manpower to help
and gain experience in the work. Scientists and technicians from U. S. atomic
energy projects arrived to assist. The
alarms had evacuated the plant on a Friday afternoon; by Monday, all employees
were back at work

Technicians built special viewing devices to examine the interior of the reactor, and determine which of the 176 uranium-containing tubes of Calandria had burst. All 176 tubes had to be removed—a task complicated by their powerful radiation, and by the leaking contamination. Even with masks and protective clothing, men could work at it for only a few minutes' time safely. Then others had to take their places. When they had pulled out all the tubes, they studied the remaining radioactivity with probes.

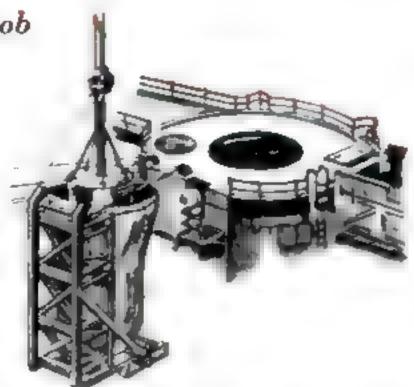
Next step would be the dramatic operation of removing Calandria itself. Wellrehearsed in advance, this was the plan:

An overhead crane would lift the tank, 10 feet high and eight feet in diameter, out of the 35-foot-high reactor structure.

This is the way they did the ticklish job



OVERHEAD CRANE hoisted the tank out of reactor and swung it to waiting cradle.



CANVAS BAG on upended cradle received tank. Ropes closed bag, lowered cradle.

Then the tank would be dropped into a huge canvas bag, on a cradle fitted with skids and upended against the side of the reactor. The cradle would be lowered to horizontal, resting on its skids on the building's floor. Finally it would be towed to a burial ground outside the plant by a grader, the heaviest rubbertired vehicle on the project.

Using scale models of the reactor, catwalks and Calandria, a team of 70 men practiced the operation thoroughly. A

dress rehearsal followed

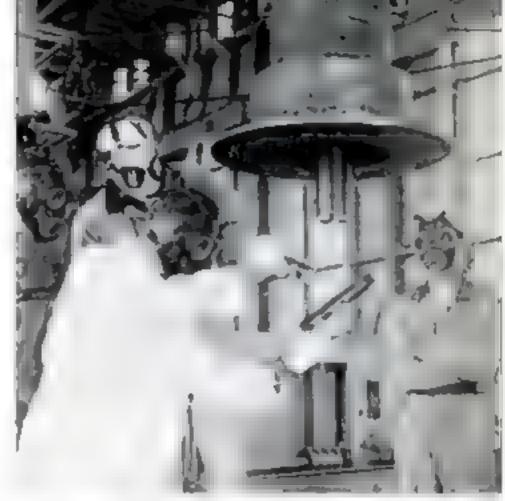
A steel cylinder filled with sand, to match the weight of the real Calandria, was lowered into the reactor. The removal of shielding from above Calandria had allowed room to do this. Wearing white coveralls and breathing masks, the crew took up their positions. An announcer in the control room called out directions to them. Thus the team learned to handle the maze of ropes that pulled drawstrings to close the bag around the dummy tank, lowered the cradle through a 65-degree angle, and then pulled a pin detaching the lines.

The Big Moment Arrives

All was now ready.

At 6:30 next evening, the announcer in the control room began calling out the 28 steps of the real operation:

"Step Number One, attach hook to lift-

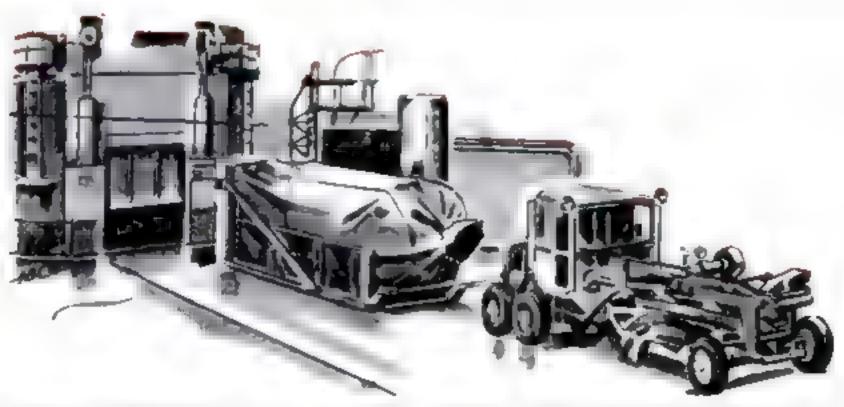


MASKED AGAINST INHALING radioactive dust, atomic experts use flashlight and mirror to inspect the contents of lead-sheathed tool that pulled aranium rods from Calandria.

ing device and align hook for lifting . . . Step Number Two, raise Calandria six feet, Raise Calandria six feet . . ."

Slowly the aluminum tank rose into sight above the reactor structure. Twelve men, trained to handle any of the crew members' jobs, stood by to cope with emergencies. Project photographers were at shielded points of vantage.

"Health survey men take readings," the announcer directed. They moved forward with radiation instruments and quickly measured the intense rays



3 crapte, seasing tank, was towed on skids to burial ground by a grader. Thick lead

shield, fastened to back of vehicle's cab, protected driver from intense radioactivity.



LARGEST RADIOACTIVE OBJECT ever handled, 232-ton Calandeia emerges from zeactor. No one is to be seen in picture because members of crew are at respectful distance.

streaming from the tank. An announcement was made:

"Four minutes will be allowed for photographs." Cameramen, moving to marked positions, took pictures to be used for later scientific studies.

Now the crane man, in a well-shielded booth high in the building, swung Calandria directly above the canvas bag. Squarely and smoothly, he lowered it in. The cradle and its load swung downward to the floor—and then the unpredictable happened. One of the many ropes snagged. But the stand-by crew, who were there for just such a contingency, succeeded in freeing it quickly.

"Pull lowering-cable pin from skid," the announcer resumed. Emerging from behind shields, three men pulled a rope attached to the pin

"Move grader to towing cable . . . Secure, and tow skid to first position . . . Rope cutters, cut all trailing ropes . . ."
Thirty minutes had elapsed,

"Supervisor Number Three, resume towing," ordered the amounteer. "Complete control is transferred to you." Thick lead shielding, fastened to the back of the grader's cab, protected the driver ready at its wheel.

Calandria Takes Last Ride

A long whistle blast warned all in the plant that the funeral procession was under way. Supervisors in their cars led its slow movement. Next came the grader towing Calandria. Health surveyors, checking the road for possible contamination, brought up the rear. A deserted scene confronted the cerie cortege. Guards had retreated from sight. The usually well-guarded main gate stood wide open.

In buildings along the route were radiation-monitoring instruments, operating continuously. As Calandria went by, their pens shot right off the charts.

Calandria reached its final resting place, a site well away from the project but within the 10.000 acres it controls. There, a bulldozer heaped sand over the tank to shield it. Calandria was dead and buried.

A brief epilogue concludes the story: Chalk River's reactor will be restored to service. Its massive outer structure is undamaged, and a new Calandria will be placed within it.

As for the buried Calandria, its grave will not go unvisited. One end of the tank has been left accessible, for study when its radioactivity dies down sufficiently—so scientists can learn, for example, how neutrons have altered its metal's structural properties. But so formidable is this atomic dragon, even in death, that it will be perilous to approach for some time to come.



Here's One Place the Railroad Must Wait for Motorist

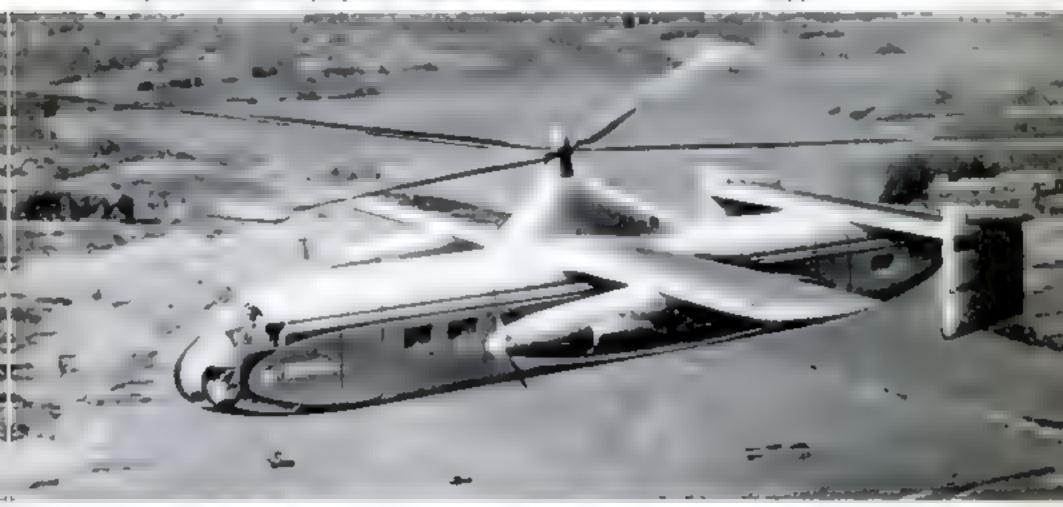
IN BURKS IDAHO when you would for gallers of gas the Northern Pacific hand address the Northern Pacific hand address the desire from horses which you get it. The town's at the bottom of a VS' gast convonthe single narrow street is on piles over a

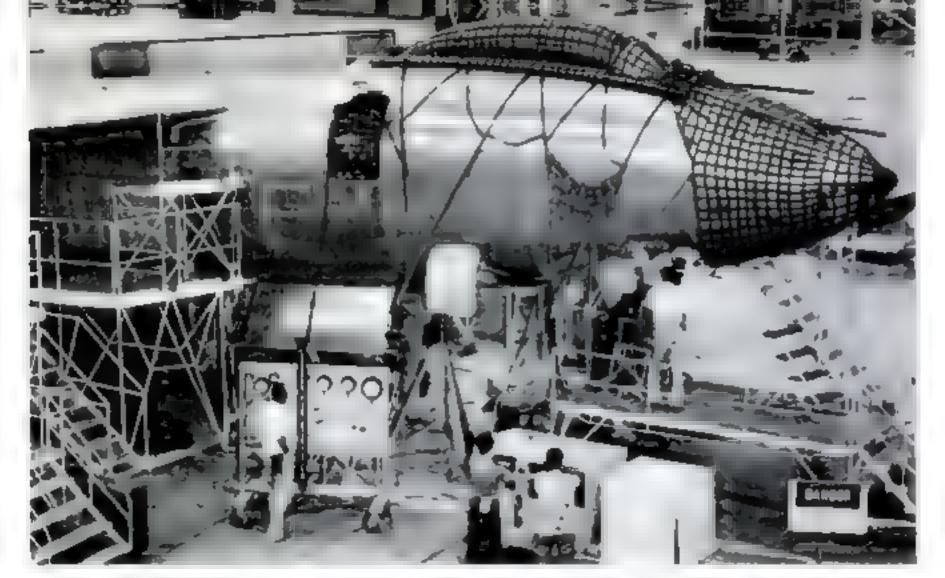
nver and the tracks in cright down the indidle of the street. Loccinctives elear the gas pump by ones 25 inches, and its the only gas station within seven rules. It stone on the street—train or ear—has right of way.

British Plan Big Copter for City-to-City Express Service

The big tel copter archives a note go i to production, is been ed as a rank to twin-curine aircraft or interesty rank. Called the Rotodyne, it will carry 40 to 50 passengers. It powered by two propelier turbines using

tip driven at rotors. It ray conding doors at the rear will make the crist surrole for a car ferry or freighter. Fairey Aviation will build the experimental elecopter for the British Ministry of Supply.





Sock on the Nose of Jet Bomber Protects Men During Tests

As HE yanked up his socks on the job one day. Joe Gabriel, aircraft worker, got an idea. Now a giant sock covers windows of B-47 bombers undergoing internal pressure tests at Lockheed's Marietta, Ga., plant.

When the Stratojet makes like it's flying 40,-000 feet up, the nylon net traps any glass blown out. Previously, the plant used a steel cage to protect engineers running tests. It cost \$5,000, the sock only \$1,500.

►►► Half-carat diamonds look as big as billiard balls on the viewer of a new jewelers' instrument. The tiniest imperfections—flaws in the stone or cutting irregularities—show up on the image when the Magnascope throws a beam of light through the gem.



He Records Fish Talk

Currous to know what sounds fish make under water, the German above made a tape recording at the aquarium in West Berlin. What he got was a lot of grinding noises, picked up by a microphone stuck through the wall of the tank at upper left.



They Get 150 Miles to Gallon

A NEW 1%-hp, air-cooled bake motor revs up when the cyclist pedals a few feet. Then a drive wheel takes over, turning the front wheel by friction. The Travis Products Co., Chicago, savs the one-lunger propels a bake 30 m.p.h., does 150 miles on a gallon,

You'll Have Power Steering and Like It

It's the hottest auto gizmo since gears went shiftless. Next year it can be factory-fitted to almost every U.S. make.

By Frank Rowsome Jr.

IF YOU'RE a reasonably typical car buyer next year, you're likely to tell the salesman you don't want power steering, and doubt if you'll ever want it. Nevertheless, you'll probably have it before long, and be tickled pink with it. Since 1951 it has shot up from a Chrys-

ler extra to an option that can be had in 1954 on every U.S. car but the Henry J. On some Buicks, Kaisers and Chryslers it is not even an option, but is standard equipment. The problem now is not selling power-steering units. It's making them fast enough to satisfy next year's customers.

The price has dropped from \$200-plus to \$125 for some models, and will almost certainly go lower. It is installed on about 95 percent of current Cadillacs, 75 percent of Lincolns, and steadily growing proportions of middle-priced cars. Even the light makes, with easier steering and more cost-conscious buyers, are going for power steering at a fast clip.

How come? This buying binge can't be explained solely by the Little Lady, even though she's doubtless a potent factor. Good times account for some of it. A third factor is the high-mileage driver—salesmen and others who regularly slap on thousands of miles a month. The word they spread is that end-of the-day fatigue after a 500-mile run

How contented can be get?
The happy man above has just shochorned a two-ton car into a tight parking spot. He thinks power steering is wonderful.



Here the power cylinder, resembling glorified shock absorber, is placed down beside the regular steering links. Valves may be in it, or at the pitman arm. Pump is separate.



Valves and power cylinder together are incorporated with the steering gear itself on this type, though the pump and reservoir are separate. Integral units were the first in use.

is conspicuously lessened with power steering on your car.

Not that it's all sweetness and here's-my-money. A Sour School of autoists holds that it's just one more costly, bother-some and largely unnecessary gadget. "I'm not so decrepit I can't move a wheel myself." one of these characters will grumble, "and I'm damned if I want to get into a tight turn with some hydraulic dingus to louse up the steering."

This bilious viewpoint quite often changes after a few hundred miles behind a hydraulic-assist wheel. (Not instantly—for some cars and drivers there's a get-accustomed period.) Pretty soon power steering gets to feel familiar and rather wonderful. The shock comes later, when you drive a car without it. Then you wonder why you were ever willing to wrench a sluggish, trucklike wheel around on a long trip.

Design squabbles. Passenger-car power steering is still so new that basic design hasn't jelled yet. There are sharp technical controversies as to whether the integral or linkage type is better, whether a few pounds of effort should be retained before boost comes in, and as to how much the steering ratio can safely be dropped with power.

Actually, there are more similarities than differences. All current U.S. jobs are hydraulic-assist units that reduce—not eliminate—steering effort. (Studebaker announced a mechanical unit early this year but soon supplanted it with a hydraulic one.) They all use belt-driven pumps to force high-pressure oil into actuating cylinders. And they are all heavily engineered to "fail safe"—never to do worse than to leave you without assist.

The integral-vs.-linkage issue is a nicely balanced one. An integral unit appears to be a more "elegant" design, to have shorter high-pressure hoses that flex less, and to be better protected against rocks and ice. But a linkage unit may be quieter (the steering column is a fine route up which to telegraph noise and vibration), cheaper to make, and more suited for installation on high-production cars. From a driver's viewpoint, both behave about the same.

You want some feel? Here the makers start shrilling at each other. In one corner of the ring is GM, seconded by Ford and some of the independents, in the other is Chrysler, seconded by Gemmer (which helped develop the Chrysler unit) and by Packard. The issue is this:

GM says that power should cut in only after the driver has exerted three to eight pounds of pressure on the wheel rim Unless this effort is left in, a driver has no feel of the road, no cue as to how "hard" he's steering. This cue, according to the GM view, comes mainly through wheel resistance, and is essential to prevent a driving-on-ice sensation.

н

Nonsense, retorts Chrysler tartly. Assist should occur as soon as you apply eight to 16 ounces to the wheel. Why retain an effort that is a big part of most highway driving? Why keep in a work load that, on crowned roads or in cross winds, is continuously fatiguing? Why provide an expensive mechanism and then set its valves so that it is mostly just a parking aid? Feel of the road is a complex entity made up of many more things than muscular sense, it includes cues from sight, sound and the middle ear, as well as an awareness of side loading from the viscera (guts, if you prefer) and seat of the pants.

Moreover, asks Chrysler with a touch of asperity, which steering-effort curve is likely to feel better; one that has the same shape as a manual curve but is lighter, or one that goes up steeply to a "break-through point" and then flattens off in a different direction.

Who's right? It's not easy for a casual driver to say. A newcomer to power, his reflexes adjusted to a manual gear, may accustom faster to a GM unit because it is more familiar. (He may even be disappointed to find that his wrists have noticeable work to do) One circumstance where the newcomer may become aware of the GM unit is on a sweeping highway turn of decreasing radius. He starts around the turn without assist, and then nudges the wheel a bit more until power cuts in. Since the wheel scems to turn more freely, he oversteers and then has to back off a smidgen. (The wheel doesn't actually turn easier, of course; it is just that the rate of increase of resistance lessens.) This is a minor quirk and soon disappears, or correcting for it becomes unconscious.

On Chrysler units the steering wheel is delightfully—almost alarmingly—free at first. The proportional nature of wheel resistance is hard to detect at the beginning; a hand that has been hefting stones does not readily discriminate among pebbles. But when your reflexes are adapted, the wheel is a dilly to hold, and parking or tight turn-arounds are so easy they seem sinful.

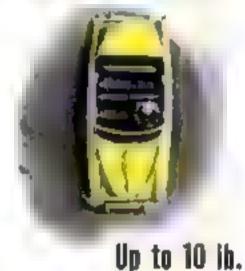
The gear also handles well in conditions where those who don't know power steering might think it would be bad—when you drive on the edge of "losing" it. Take a Chrysler too fast down a washboardy gravel road and you'll find that the corrections needed to slap the rear end back where it belongs are smaller and faster than they'd be with manual gear. It suggests that skid perceptions, at least, do not come to the brain from muscular feel.

Whither ratios? Deciding which system you prefer would be easier if the makers did not also disagree on steering ratios. Chrysler says in effect that with power there's no

Typical Manual Steering Effort

Without power, how hard you work depends on a lot of variables. But here are fair samples:

Ordinary highway



Street corner



Parallel parking



need for the extremely high ratios used in recent years; GM agrees that ratios may come down—but only gradually, over a number of years.

Technically speaking, a car has at least three steering ratios. But for our purposes it is enough to say that the overall ratio relates steering-wheel turns to front-wheel deflection. The higher the numerical ratio, the more you have to crank the steering wheel to cock the front wheels over a given amount.

Ratios have climbed spectacularly in recent years. In 1929 the Chevrolet gear was 9.5 to 1; in 1930 Plymouth was 13 to 1. Current Fords are 26.3, Buicks 29, and the biggest Packards sport a steamboat 30.9.

Ratios have been kited, of course, in an attempt to keep steering effort downdespite such effort-absorbing trends as growing car weight, increased frontwheel load and baggier tires. Designers have also been jiggering front-end geometry for the same reason, adopting compromise caster angles that ease steering at a cost elsewhere, mainly in the selfcentering tendency.

But the main penalty has been the ratio climb, and its "slower" steering. Some experts argue that the trend has gone beyond safety. They claim that so much wheel winding is needed for a major change in course that the quick swerve-for-safety has become almost impossible. They contend it is tough to turn a wheel far enough fast enough to make, say, a quick zig to duck a hilltop road hog, or to make a lightning lane-change to avoid a rear-end smash.

Power to the rescue? With hydraulic muscles to lick the effort problem, ratios

Who's Got What in Power Steering

Make	Price (Fed.taxinc.)	Type	Over-All Ratio Manual Power		Threshold	Manufacturer
CHEVROLET	\$177.55	integral	23.1	22.1	31/4 lb.	Saginaw
FORD	8134,40	linkage	26,3	26,3	3½ lb.	Bendix
PLYMOUTH	N.A.	linkage	21.1	19.7	1 lb.	Monroe
BUICK	\$177.40*	integral	29	26	3½ lb.	Saginaw
PONTIAC	\$177,40	integral	25.t	26	3½ ib.	Saginaw
OLDSMOBILE	8177.40	integral	27.5	25.73	3½ 1Ь.	Saginaw
DODGE 6	N.A.	linkage	21.1	20.4	1 1ь.	Monroe
DODGE 8	N.A.	linkage	22,2	20,4	l ib.	Ross
MERCURY	\$151.50	linkage	26.4	26.4	3½ lb.	Bendix
NASH	\$192,50	linkage	25.5	25.5	3½ lb.	Bendix
STUDEBAKER	8177.38	integral	24	żì	3 Ш.	Saginaw
CHRYSLER	\$177,352	integral	25.8	16.2	1/2 lh.	Gemmer
DE SOTO	\$177,35	integral	25.84	16.2	1/2 116.	Gemmer
CADILLAC	\$176.98	integral	25.47	25 47	3½ 1Ь,	Saginaw
PACKARD	\$195.	linkage	27.83	22,5	1 հե.	Dendîx
HUDSON	N.A.	linkage	25.6*	25.6	3 lb.	Sagmaw
LINCOLN	8177.40	integral	26.1	21.3	7½ lb.	Seginaw
KAISER	\$131.227	linkage	25.1	25.1	4 lb.	Monroe

^{1,} N. 1 An approache at press time 2. Standard on Randmasters 3. Standard on Crown Imperials 4. 23.8 on De Soto Six 5, 30 9 on 200 and 100 models 6 20.2 on Wasp and Super Wasp, with and without power 7 Standard on Dragons

could be dropped, and compromised geometry might be corrected. That at least is the pious hope; the practice, as will be

seen, may be something else.

So far, Chrysler leads in ratio-dropping. A manually steered Chrysler is 25.8 over-all, a power model 16.2. Lincoln goes from 26.1 to 21.3. A few other makes drop the ratio a couple of points with power; most of the others leave it unchanged. The GM view appears to be that drivers should not be expected to adapt to major changes overnight, and that ratios may be brought down a point or two a year. (Power-steer models of Olds and Cadillac are due to drop slightly in 1954.)

There are two additional reasons why ratios may not come down as fast as some drivers would like. One is cost. If a steering system is engineered so that it is primarily a manual job, with power as an extra, it is likely on high-production cars to be a linkage unit added to the regular gear. To change the ratio too would probably involve modifying the gear, which would boost cost. (Changing ratio by varying the length of the pitman arm is apt to mess up the geometry.)

Dead-engine hazard. The second factor that may slow up the ratio drop is safety. On a power-steer car, steering effort shoots up tremendously the moment hydraulic assist quits-typically, if the engine stalls. This isn't particularly perilous at fair speed, since effort is relatively low then. But it can be awkward on a low-speed downhill turn; the situation might spell trouble, say, for a woman driver who kills her engine while turning sharply out of a driveway. In a second or two steering effort might jump from a few pounds to 30 pounds. The load goes up on all power-steered cars, of course, but much more on ones with a substantially lowered ratio.

For adequately muscled drivers, this low-speed stall is more startling than dangerous. Still, it would seem wise to brief a woman driver in your family that it can happen—and also hold a practice session in which you have her flip to neutral and

[Continued on page 296]

How to Hold a Steering Wheel

WITH or without power, there is no single "best way"—it depends on your size, car and preferences. But an informal poll of test drivers, men who clock hundreds of thousands of miles each year, shows marked agreement. The favorite position is with the hands low, almost in the lap—at 20 to 4 or even 25 to 5 on a clock dial.



Basic position. Hands need not be symmetrically placed.



If crisis occurs, lift hands fast to get maximum advantage.



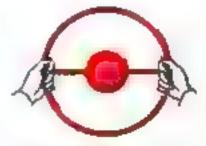
High hands are okay for a change. But fingers must now support much greater share of arm weight. Shoulders may be pulled away a little from seat back, and oversteering on turns is more likely.



Finger grip from underneath has the merit that if hand must turn wheel up high, grip is preserved. But if you hook your fingers over the lower half of the wheel rim, the rim twists out of your grip if you must bring your hand up fast.



On a turn, it's often better to "paw" wheel around by regripping it, rather than by crossing arms.

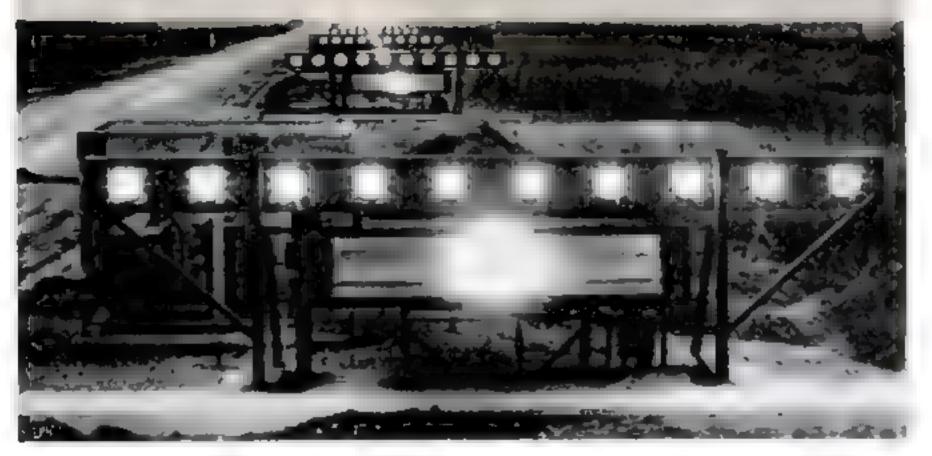


Lock a finger around a spoke if driving at high speed, as insurance against jerk of front-tire blowout.

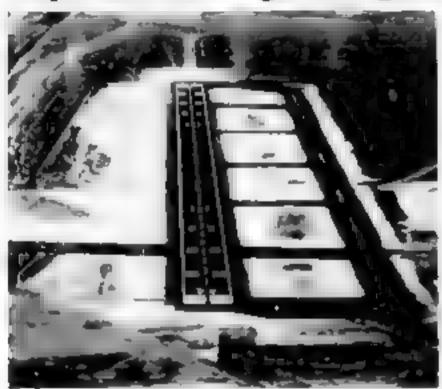
General Wheel-Handling Tips

Beware outdoor elbow. For most driver-car combinations, driving with the elbow out the window is tiring on a long trip. Use the elbow rest, or nothing; sit squarely behind the wheel; and use both hands equally.

On a tight turn, when you must fight the wheel around, don't just overpower it with steady pressure. Instead, get the extra wheel travel you need with short, sharp jabs. It gives more precise control and reduces the chance of risky oversteering.



Airport News: Finger of Light Points Out Landing Approach



Newark Ameour now has a runway so fancy it cost more than the whole New Jersey sirport when it was built 25 years ago. The \$9,000,000 strip (left) stretches 7,000 feet and is 200 feet wide with 30-foot shoulders. A parallel taxiway feeds into it at seven points, so that as soon as a plane sets down it can leave the runway clear for the next one.

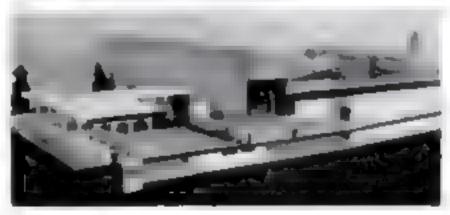
A pilot heading for the instrument-approach end of the runway faces 30 horizontal bars of light spaced 100 feet apart (above). Below each string of lights a single flasher goes on and off in sequence to point out the center of the approach like a moving tracer bullet.

Two-Way Piers to Speed Traffic



Passencess at Manu's new airport will embark from long piers, just as if boarding a ship. The piers, double-decked, will extend from the terminal building to the loading area. Outgoing passengers will use the top floor, incoming passengers the ground floor. To keep auto traffic flowing in one direction, separate ramps will allow ears and buses to discharge passengers at the one level and load at the other. It is estimated that the finger piers will serve 33 passengers a minute.

Elevator to Load Jets



You'll take an elevator to your plane at a new airport Australia is planning. As shown in the model above, the terminal is nested under a tilted apron to keep passengers away from the noise and blast of jet engines. The elevator, opening in line with the plane door, will keep travelers under cover all the time. When all are aboard, the pilot will roll the plane downhill off the apron and along the runway, well away from the terminal, before starting up his jet engines.



LeBoy Neumsyer, 22, drove this Herbert Special five miles at 233 m.p.h., set a new record.

Back-yard mechanics topple speed marks in

Super-Hot Rods

HOT-RODDERS—the boys who build their own streamliners, with native wit and a shoestring—are giving the professional racers stiffer and stiffer competition. At the rate they're going, some back-yard mechanic may soon wear the laurels of the late John Cobb, who traveled faster in an auto than anyone else has ever done

Both national and international speed records went flying this fall when five super-hot rods, largely homemade, spun across the glittering, 14-mile straightaway on the Bonneville, Utah, salt flats,

Timed in their competition by the AAA, at a cost of about \$1,000 a day, the glass-fiber and aluminum streamliners demonstrated more to hot-rodders than just superior speed.

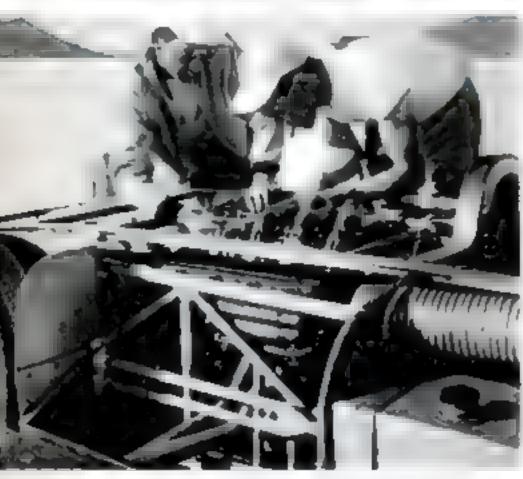
Entries with new gasoline engines used current production models—with special fuel and carburetion, naturally. The fuel was an alcohol blend—in some cases 45 percent nitro methane.

The single diesel entry had a truck engine, fitted with two superchargers in series. The projectile-like cars rolled to new records on special eight-ply tires with one-eighth inch of tread and two to three inches of running surface. The tires were inflated to 60-70 pounds and were

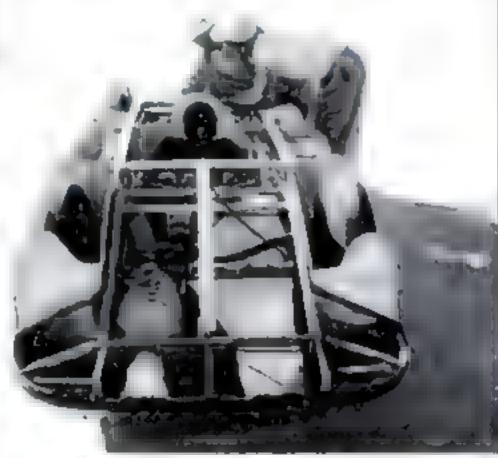
said to be capable of doing 300 miles an hour.

Weight had been trimmed more intensively than ever. One car even had magnesium wheels.—Andrew R. Boone

THE HOTTEST CAR.



BUILT LIKE A BRIDGE, the Shadoff Special, winner of the fastest nule (236 m.p.h.), had frame tubing of stainless steel. Builder said it could roll over at 200 and not fly apart.



seen above before its body was lifted on, won its builder, Ray Brown, the Maramount gold trophy and a \$1,000 college scholarship.

THE DIESEL



odd-looking entry was the only diesel in the meet. With a hoppedup GMC 671 truck engine, it carried its builder. 26-year-old Dana Fuller, one kilometer at 171.80 m.p.h. His '54 goal: 200 m.p.h.

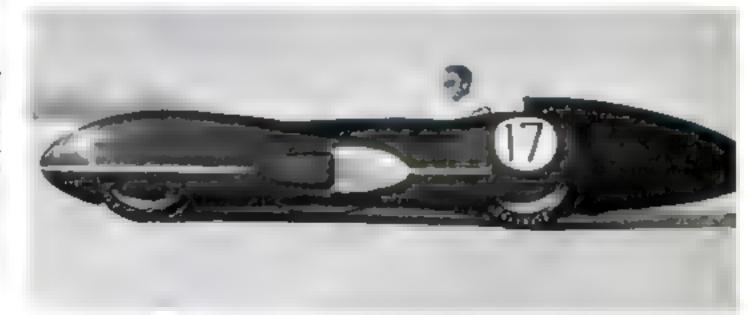
THE MERC





THE ONE THAT CRASHED

AT 240 M.P.H., the highly promising No. 17, at right, went into a roll and was demolished. Its unlucky driver was then rushed to hospital. Car weighed 1,300 pounds, had a Chrysler V-8 of 368-eu.-in. displacement.





FIRST HOT ROD to sun for official international records (not official until reviewed by the F.I.A. in Paris), Boh Estes' Mercury Special (left and below) set records at Bonneville in '52 but was besten by a Chrysler in '53.



P.S.

Last minute news

RADIDACTIVITY traveled far and wide when a student unwittingly stepped on a glass capsule holding 1 750 of an ounce of radius in a Navy damage-control classroom at San Francisco. It was picked up by students' skin and hair, their shoes and clothes, and their cars. An easily detectable trail of "hot" footprints led to the home of one student. Another made a radioactive outline of his body on a couch. No one was hurt but it was three months before the lab building could be used again.

CAN CAMELS TEACH HUMANS how to stand hot climates? Composed of researchers who think so, a Duke University expedition to the Sahara Desert is spending a year studying the animals, to learn how they thrive in a region where temperature sours beyond 140 degrees and years may pass without rainfall.

King Solomon's MINES will be operating again within two years Modern mining methods will restore to production the 3,000-year-old copper workings of Biblical fame in southern Israel, says a government official.

POWER FROM THE EARTH may bring an industrial boom to New Zealand.

DRIVING OUTRUNS ROAD BUILDING

150

150

150

150

151

1521

1521

1531

1541

1552

Sinking deep bores in the geyser area of North Island, engineers find it has the highest underground steam pressure in the world. Harnessing the steam would yield electricity at less than one-tenth its cost from hydroelectric projects, a report of their study concludes.

UP-TO-DATE SPIES may resort to radioactive writing. Army investigators were recently warned by Capt. J. W. Osterburg, an expert on codes and ciphers. Secret messages using this kind of invisible ink would be read with a Geiger counter, instead of being made visible by chemicals.

"COLOSSATRON" is the name applied to a projected 15-billion-electron-volt atom smasher, which would be the most powerful in the world, in a report on its design. Applying a newly discovered "strong-focusing" principle, it would measure more than 300 feet in diameter. The Atomic Energy Commission is being asked to build it. Highly unofficial suggestions for naming its next two successors to the title of world's biggest: (1) the supercolossatron (2) The Thing.

SUBSTITUTING DOUBLE DOTS for dashes would simplify sending and receiving and save up to 25 percent of ourrent, in an improved radio and telegraph code proposed by a Marine Corps officer, Capt. Nils B. E. Forsberg. The letter A, which is .- in standard code, would be . . . in his.

THE WORLD'S BIGGEST TELESCOPE has an invaluable new accessory. An ultrasensitive photometer enables Caltech's 200-inch "eye" at Mt. Palomar to detect stars and nebulas too faint to photograph.

RADIO SETS REMOTE-CONTROL SIGNALS and switches on a 90-mile single-track railroad, nearing completion in Venezuela to bring iron ore from the rich Cerro Bolivar mine to the coast for shipment to the U.S. By flicking levers, an operator at the port terminus safely maneuvers past each other on sidings two trains traveling in opposite directions, as incoming radio signals advise him of their progress.

The Editors



The Best Christmas Toys You Can Build

How to make them is shown on the following six pages.



Rowena M. Shoemaker

tist. Do The Play Schools Issueration

Will Be Favorites for Years to Come

THE best tovs are simple ones designed to suit children—not adults who make or buy them. That is one big lesson I have learned in 14 years with the Play Schools Association, which supervises the play of thousands of children a year at settlements, hospitals, orphanages and organized play schools throughout the country.

The five pieces of play equipment you see on these pages are simple. Deceptively so, for time and care are needed in

making them.

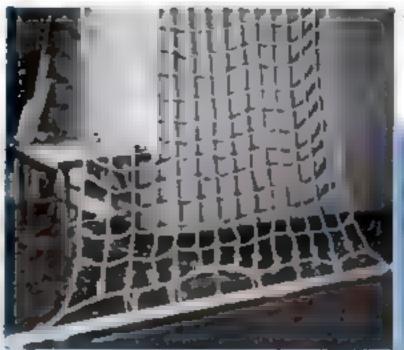
They are rugged, able to take the murderous punishment of a whole family of children. That is important, Shoddy construction is plain dangerous; children need equipment they can safely bang on, jump on and throw around.

Use No Nads

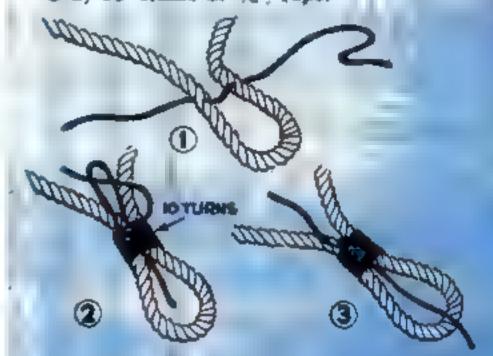
Preferably all wooden parts should be hard maple, which is almost splinterproof. Since maple is not easily obtainable in the needed sizes, clear white pine was used instead (except for the blocks which, offering the greatest splinter hazard, are maple). A great deal of effort was spent in sanding all surfaces perfectly smooth, rounding corners and edges, and countersinking screws. No nails should be used anywhere. The wooden toys—except the blocks—should be finished with tough varnish or enamel.

[Continued on page 264]

Cargo Net Lets Them



AROUT \$25 WORTH OF ROPE goes into the net—400 feet of 1/5" diameter and 50 feet of 3/4". Sixteen horizontal lengths 3/4/4/4" and '13 verticals are woven into the 8'-by-10' frame of 3/4" rope.

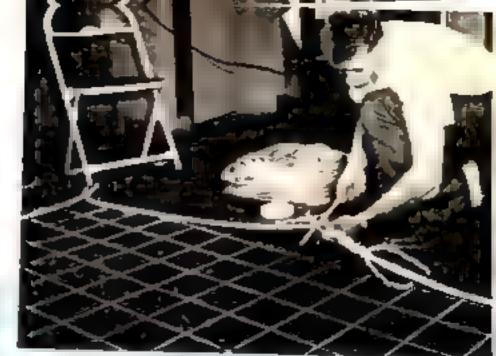


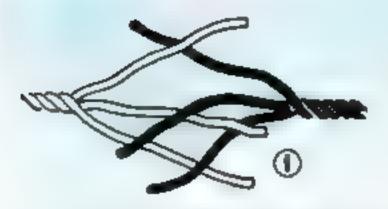
2 CORNER LOOPs are formed with heavy twine. Twine is woven through strands of rope (top), then eye is formed with short end (lower left). Twine is strapped around rope 10 times, then inserted into eye, which is pulled tight under wrapping (right).



Climb and Jump Safely

Hang this net from the basement ceiling joists and turn them loose. They'll climb for hours.









1 FRAME is laid down on squares chalked on floor. Rubber bands hold corner loops while splice is made at bottom center. Strands

are unlaid and brought together (left), opposite strands are joined by overhand knot (center), then weven into rope body (right).



3 VIRTICALS are spliced to frame first, using eye splice. Strand of eye is tucked between strands of frame (top left). Three loose strands are tucked into body of vertical to form eye (right), then woven into strands (bottom left) as in step 1.

4 HORIZONTAL ROPES are spliced to frame with eye splice. Rope is cut to 10' length and one strainl is unlaid for full length. This strand is tucked into strand of vertical, rewrapped about 6" then tucked into next vertical, Stick (below) maintains spacing.



Rocking Boat Is Also Practice Stairway

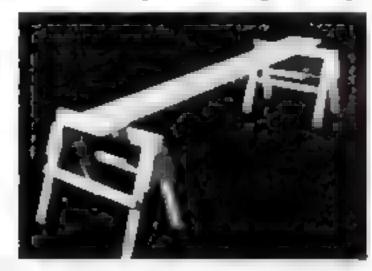
Used as a rocking boat, it is filled with fun. Turned over, the toddlers can safely practice the serious business of going up and down steps.



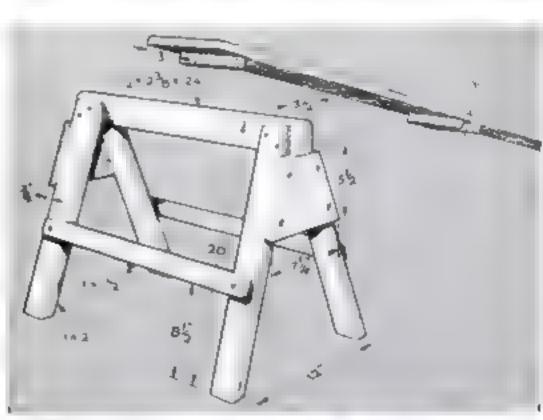
2 compass saw cuts the curved sides with case. Rounded ends must be cut with coping saw as the radius is tighter. Cutting close to line will save planing later. Clamps hold the board firmly in place on your bench top—and let you concentrate on cutting the wood.

3 REMOVE SHARP CORNERS. There should be 3 no sharp corners or edges on any children's toys. Remove them by planing a heavy chamfer on each side, then sanding round and smooth. Smooth flat surfaces at this time, using open-coated paper for fast sanding.

Plank, Two Sawhorses Make Triple-Play Toy

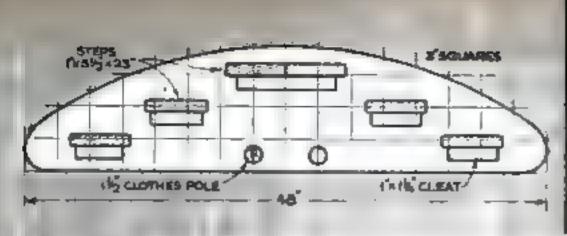


One horse and the plank are a seesaw; two horses support plank for walking—and the horses are horses.

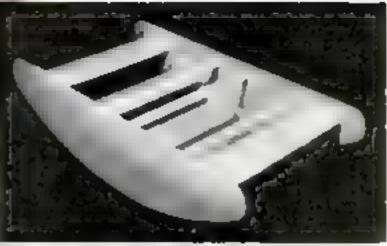


sees worth. Two sawhorses take 16' of 1½" by 2" for legs, 8' of 1¼" by 1½" for side braces, 3' of 1" by 6" for end braces or gussets, 4' of 2" by 3" for crossbeams, 7' of very clear 1¼" by 10" for seesaw plank.

182 POPULAR SCIENCE



1 LAY OUT 3" SQUARES on 4' length of 12"-wide board and draw in outline of side and location of scate and holes for hand bars. A coffee can is just about the right diameter for drawing the round ends.



CLEAR PINE for rocker should cost less than \$8. You'll need 12' of 1'4" by 6" pine for seats, 8' of 1" by 12" for the sides, 6' of 1" by 1'4" for cleats, and 4' of 1'4" clothes pole.



4 DIPTH GAUGE, made from a short piece of clothes pole, checks depth of hand-grip holes. These are made with expansive bit. Drill test holes in scrap first to be sure the bit is adjusted correctly. Cleats are gloed to sides, a single wood screw serving as a clamp-



5 final assembly. Insert clothes poles in holes and join ordes with scats screwed to cleats. Note that in this position the rocker becomes a short set of practice steps. Toddlers can climb up and down—a favorite pastime—without danger of bud falls.



1 SAWING JIG helps cut uniform bevels on leg ends. Mark angles on one leg and cut it and the jig together. Other legs will conse out the same, as saw will follow original cut in jig, Rough surface of saw cut can be smoothed by a few quick strokes of hand plane.



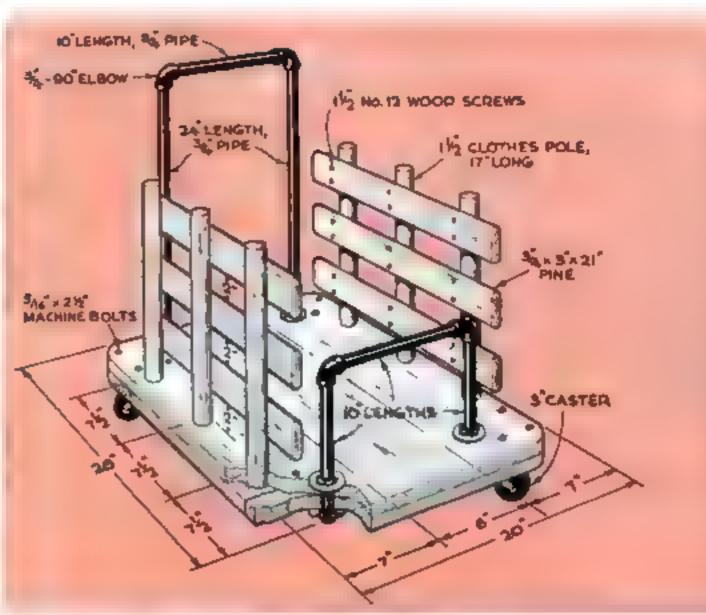
2 LAYOUT DRAWN ON BENCH TOP helps set up legs. Crossbeam, rounded and smoothed, is stood on end and legs put in place on layout. Gussets are screwed to legs laid flat, then leg assemblies are screwed to crossbeam. Cross braces complete horses.

Expressman's Hand Truck Brings Fun on Delivery

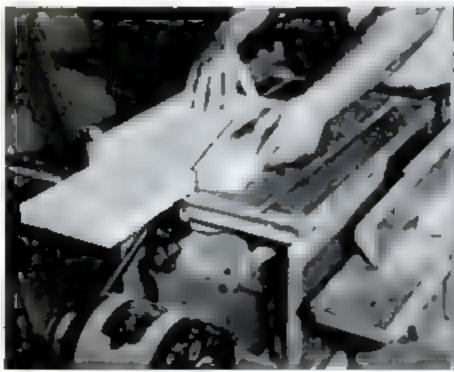
Designed to store and haul building blocks shown on bottom of pages, this hand truck will probably see more service hauling kids.



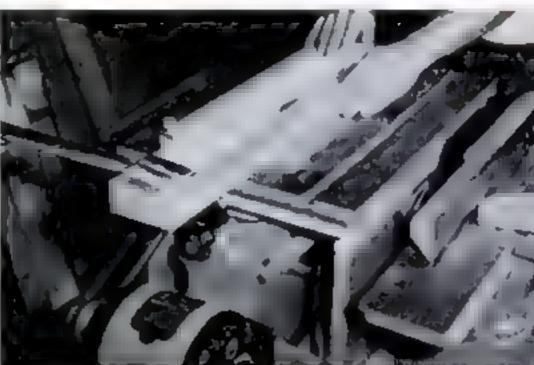
hand truck will take you for a \$23 ride. Casteen at \$9 a set of four are biggest item. Pipe nipples and fittings are next biggest at \$6.50. Balance goes into lumber—14' of 1'4" by 7" for double-thickness base; 9' of 1'2" clothes pole for side stakes, and 12' of 1" by 3" for side slats. Cutaway view of truck corner (right) shows method of setting pipe in base,



The Right Building Blocks Interest All Ages-



MAPLE 15 DEST MATERIAL—no other wood will take the punishment without splintering. Cut board into strips 1½ " thick by 2¾ " wide, then cut units off strips. Blocks should be sanded smooth and corners rounded off with a few strokes of hand plane.



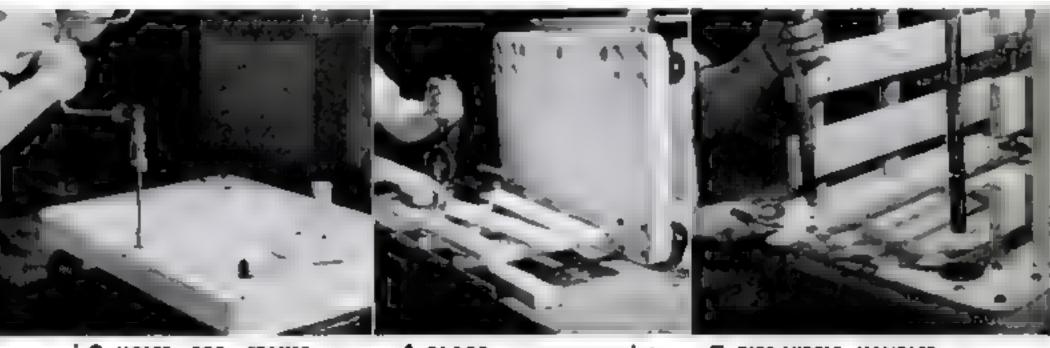
2 LONG ANGLES are cut with jig made from scrap board. Shape of angle block is cut with handsaw; stock placed in cutout and fed into saw will be proper shape. Triangles are cut with mater head set at 45°. Pillar is half the width and same thackness as unit.

184 POPULAR SCIENCE



BASE OF TRUCK is built in two layers: top layer (shown fuce down) is three boards planed to fit nicely side by side; bottom layer is simple frame to brace and hold top boards together. Clamps hold pieces while screws are draven.

CORNERS ARE ROUNDLD using can of about 4 3" diameter to draw in radius, Drawing at right shows method of rounding a corner: 5aw off corner at 45 angle: 2, plane off two shallow corners left after sawing; 3. finish with coarse sandpaper, amouth with fine.



HOLES FOR STAKES are I bored with expansive bit. Set bit to cut loose-fitting hole. Bore through top board only; leave bottom intact to support stakes.

4 SLATS are screwed to stakes, using holes in base and spacing stick to keep alignment, Bottom slat is 2" above base: others are spaced 2" apart.

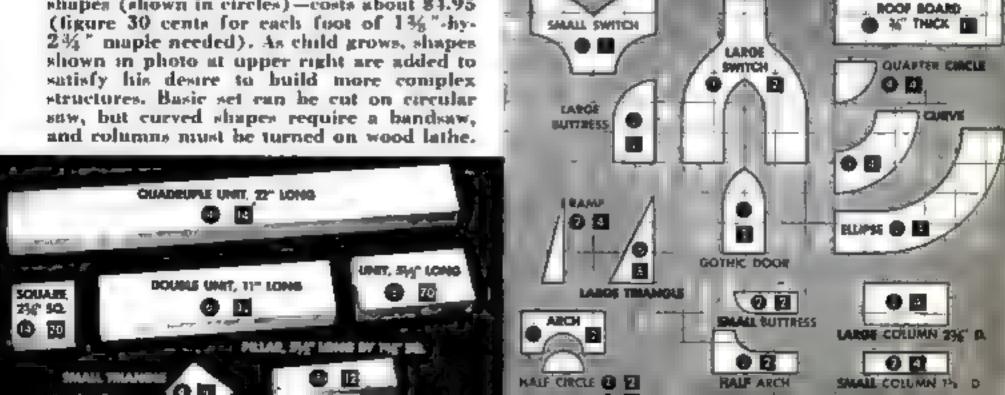
5 MPE-MIPPLE MANDLES are through base. Lock nuts and washers hold handles rigid. Have bottom ends of pipe threaded about 21/4".

This Set Can Grow with a Child

For quiet, constructive play, nothing equals a good set of building blocks designed to encourage a child's imagination and creative ability.



BASIC SET FOR TWO-YEAR-OLD Allown in photo below consists of 44 blocks in six different shupes (shown in circles)—costs about \$4.95 24 " maple needed). As child grows, shapes shown in photo at upper right are added to satisfy his desire to build more complex



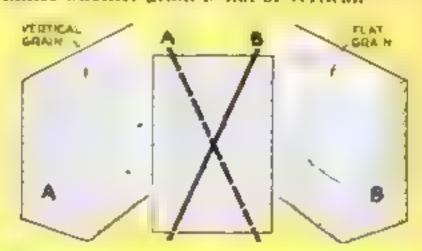


his set in block and clamped to table opposite blade. Use willest bandsaw blade you have.

IF BANDSAW WANDERS, you can keep it in line by first running stock through circular saw. Groove one edge, then turn board over and repeat operation, Bandsaw tracks in cuts.



TWO MOLDINGS FOR THE PRICE OF ONE. Ripping thick stock diagonally gives two identical wedge-shaped molding blanks, Because blanks are already tapered, they require minmum work on shaper. Angle of cut determines whether grain is flat or vertical.



186 POPULAR SCIENCE

HOW TO

Get Two Boards Out of One

Setting up your own home sawmill and using these simple tricks will save you work and get more out of your wood.

By Edwin M. Love

SAWING big boards into small ones gives you the exact size you need and cuts cost too. In effect, you buy the wood in bulk and do the millwork yourself. The technique is called resawing. And it can be used in a number of ways to shorten labor and stretch lumber.

If you need X" pieces (actual measurement), you can slice three from the 1X" that 2" nominal stock actually measures, instead of only one out of 1" nominal. You thereby get three boards for less than the cost of two. If it's molding you want, you can get two strips for every one by first ripping your stock in half on an angle.

By carefully figuring out what you need and then buying stock to cut down, you can make your own sawmill really pay off.

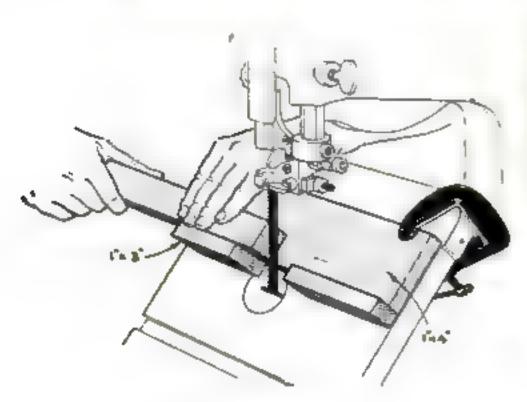
Next month, Mr. Love will show you have you can use left sawing to make flat sheets of wood balloon into shapely bowls, vases, ship hulls and other intricate objects.



MOLDING A WEDGE, one of many things you can do with resewed lumber, is easy. Metal hold-down keeps wedge against table. Slotted wood "spring" pushes piece against fence.

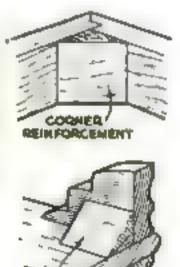


CAREFUL MESTING of curved and other shapes saves work and wood. Only one saw pass is made along each inner curve, and excess left on outer curve of next piece is sanded off.



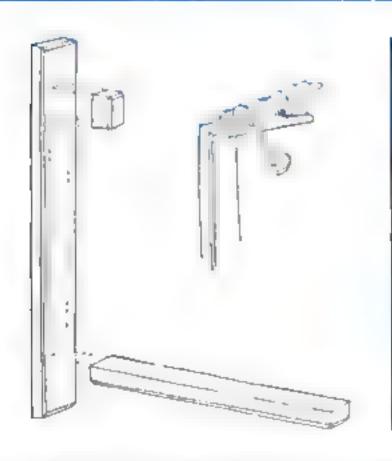
sputting square stock on the diagonal gives two triangular strips ready-made for cutting into rub blocks. Wood jig (left), is notched at center for blade. Set bandsaw table at 45° and clamp on jig, allowing for blade "lead" so it will track right. Rub blocks make inexpensive braces.



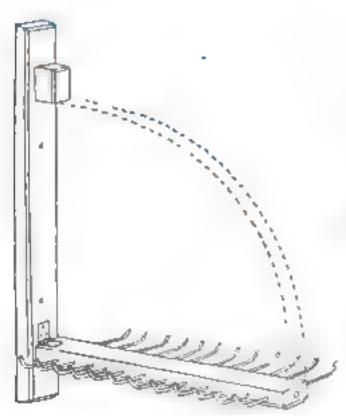


Wordless Workshop





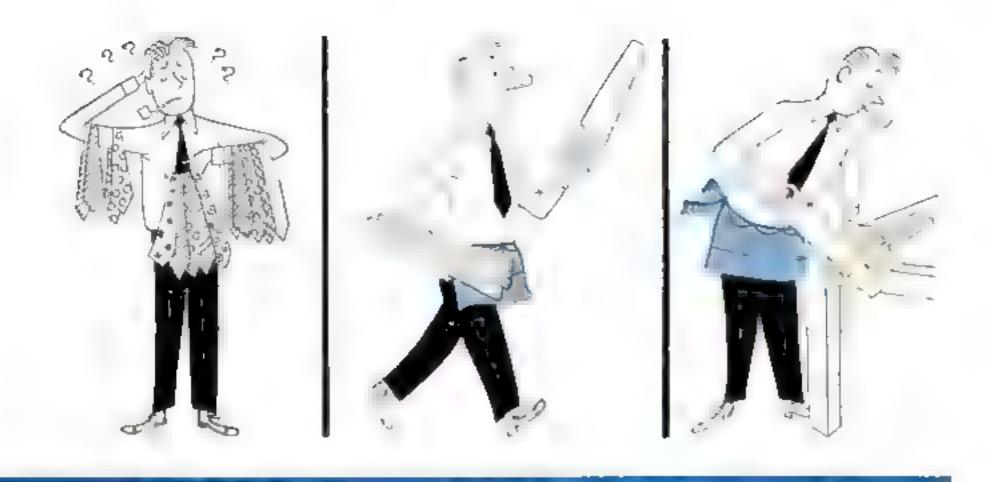


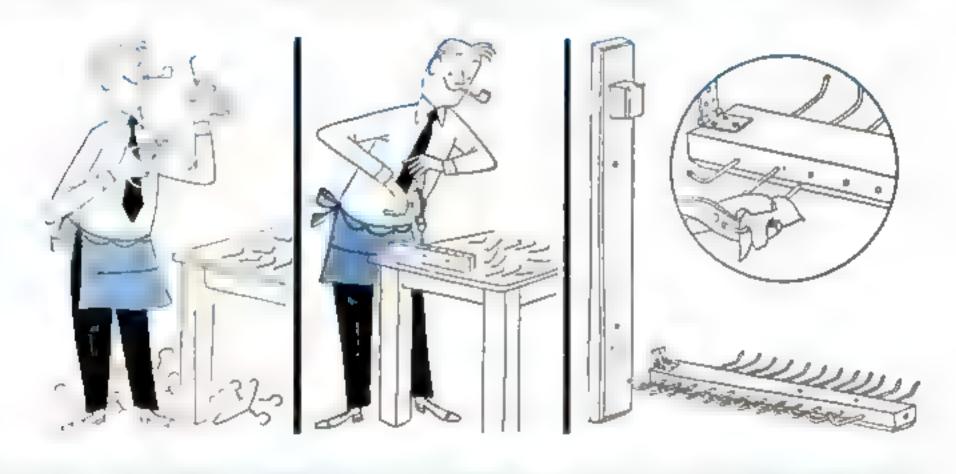






88 POPULAR SCIENCE







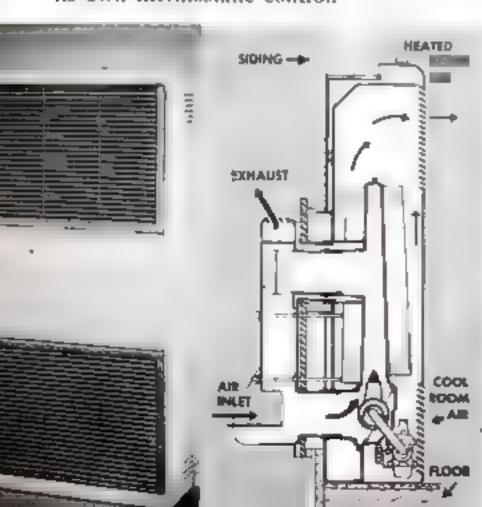
See PSM next month for another Wordless Workshop. NOVEMBER 1953 [89

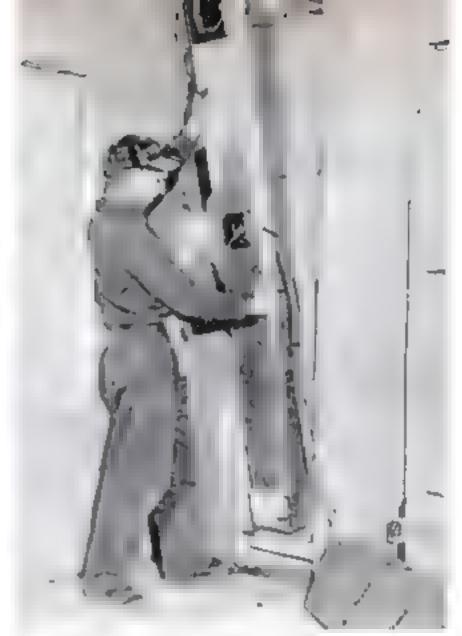
Home Heating



1. Radiant Colls Can't Burn. You can touch this radiant wall heater without getting burned, its makers say. Electric heating coils are embedded in a special ceramic panel that can be mounted anywhere without a shield. The units are also made in baseboard and portable models.

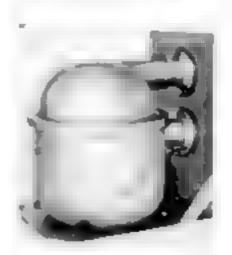
3. Heater Needs No Chimney. The chimney for the gas-burning wall heater below is a vent prutruding through the exterior wall that carries away exhaust fumes (sketch). Air for combustion is drawn in through another outside vent so that no oxygen is burned out of the inside room air. Room air also is recirculated. The unit is sized to fit between the wall study and has its own thermostatic control.





2. Heater Blows Hot and Cold. This electric room heater has a fan and heating coil to provide warm air in winter. In summer, the fan can be used alone. Each unit fits between wall studs. Because it draws in warm air at the ceiling, it's said to save power by recirculating heat usually wasted.

4. Space Heater. You can set a thermostat on this portable electric heater to keep the desired temperature. A pilot light shows when the heater is on. Separate switches operate the fan and heating coil.





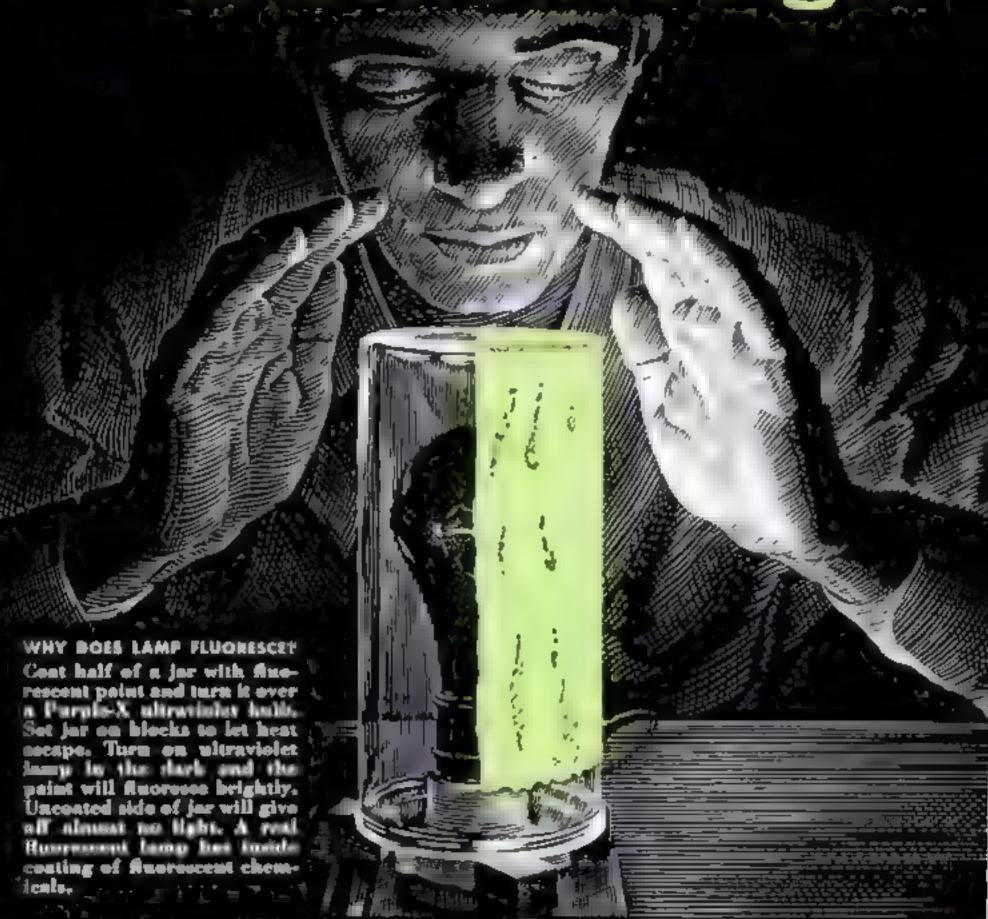
S. Humidity
Sprayer. Increased
humidity for heating
can be had with this
centrifugal atomizer.
It hooks to any
warm-air system. It
sprays water into
heated air, adding
three gallons a day.

Further information on these products can be obtained from:

1. Hentmore, 128 Bi sodicar, A?C I Electrond Products, Hox 110, St., Joseph, Mich.; J. Stewart Turner Corp., Lebanon, Ind., 4. Titan Manufacturing Co., 701 Seneca St., Buffulo; S. Wolton Laboratories, 1185 Grave St., Irvington, N.J.

[90 POPULAR SCIENCE

How to Super-Snoop on Borrowed Light



You're usually blind to ultraviolet rays, but this lamp lets you see them and many other things you've never seen before.

By Kenneth M. Swezey

and helds socks. Scientists use it not only to test ones but also to find whether nuce are susceptible to enecer.

And you can put it to use for a viriety of super-snooping—from seeing how clean your wife washes the dishes to furding whether Aunt Mining has false teeth.

Once is a sensitive to colvepart of the





CLOTHES LOOK WHITER when washed in soap or detergent containing an optical bleach, a colorless fluorescent dve that counteracts the natural tendency of white fabrica to turn yellow. If you wash a strip of cloth in a fluorescent detergent and another in plain soap, the first may look slightly whiter in ordinary light (left above). But look at them in the light of the ultraviolet lamp and the difference (right above) becomes startling.

light that hits them: they are blind to wave energy at the two ends of the spectrum out beyond red at one end and violet at the other.

But there are a number of substances that can borrow invisible light from the violet end—the ultraviolet—and turn it into the kind we can see. A nuneral called fluorspar was one of the first things found to have this property, so it is called fluorescence. Some vitamins, natural oils, minerals, even your teeth, can do this. Placed under pure ultraviolet light, a fluorescent object gleams in color when everything else is black.

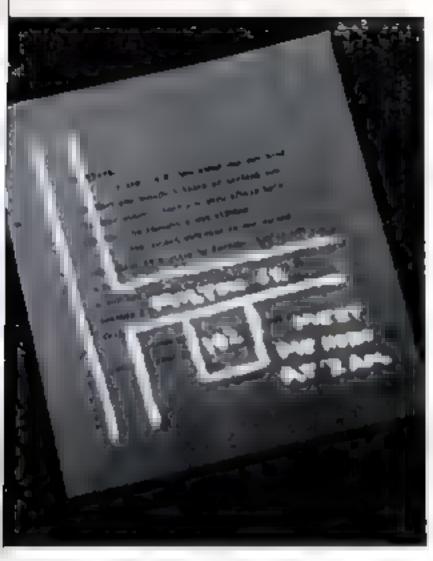
(But don't confuse fluorescent objects which only turn invisible light into visible light—with phosphorescent, luminescent or incandescent objects: they glow in the dark by emitting light of their own.)

Secret messages written with fluorescent inks glow in this "black light." So do invisible fingerprints or dirt on a plate when dusted with fluorescent powder. And because different substances fluoresce in different colors, things that look alike are found to be quite different when studied under ultraviolet light

The new fluorescent inks and dyes achieve their unique brightness in the same way. A fluorescent red ink, seen in daylight, not only reflects practically all the red in the light that hits it, but borrows invisible light and changes it to red-actually "reflecting" more red light than falls on it.

Fluorescence has another valuable use in electric lighting. A glass tube or plate coated with a fluorescent material glows all over when bathed in ultraviolet light, giving a wide, even light source instead of the small bright source of the filament lamp. The ultraviolet light in a fluorescent lamp comes from exciting a gas with alternating current.

You can use this trick of borrowing light



ENVISIBLE INK has long been a trick of spies. Write on paper with a strong solution of anthracene in benzene or fluorescent soap in water. Let this dey. Then type a normal message on the paper. Viewed under "black light," your invisible writing will shine as at left.

suffer or otto? If you can't tell by the color, an ultraviolet test will insually show you. Dissolve butter in lighter fluid in one test tube, margarine in another. I nder ultraviolet light, the margarine fluoresces bright blue, but the butter fluoresces a weak yellow.



in your home lab with the help of a Purple-X oltraviolet bulb, which you can obtain from dealers in scientific apparatus or display lighting for about \$1.25. Basically this is just an incandescent lamp, but its extra-high-temperature filament is surrounded by a globe of red-purple glass that holds back most of the visible rays. It can be operated from any 115-volt circuit, without transformers or filters. Because most of the heat from its 250-watt filament is ab-

sorbed by the glass, the bulb should, however, always be used in a metal reflector and should not be used more than a few minutes at a time. When so used its burning life should be about 50 hours.

The rest of your equipment is easy to get—soap powder, candles, butter, margarine and any fluorescent paints you can come across. Also Aunt Minnie's teeth, if you can coax her to come into your dark lab and grin under ultraviolet light.



health-department chemist in New York City devised a test to find out. Suspected dishes are disped in a solution of optical dye and examined under ultraviolet light. The dye clings to any food particles remaining. You can dip a plate into rold dish water in which you have dissolved a fluorescent washing powder. Let the plate drain. If there are food particles on it, Purple-X bulb will cause them to glow.





Corner Unit Houses Washer

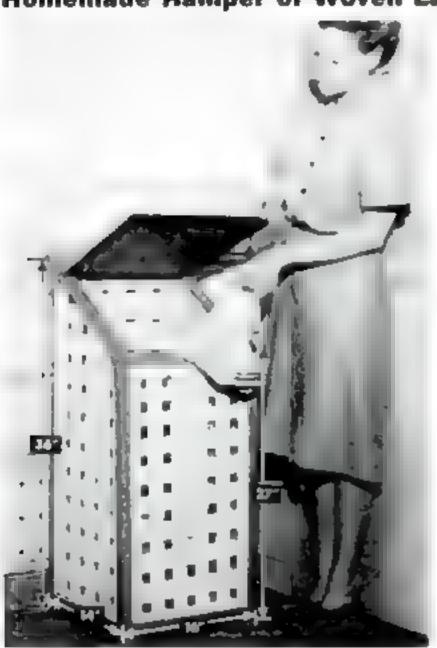
A LAUNDRY corner built around our new automatic washer not only gives my wife extra working space, but hides the stack that drains waste water. And since the water supply and drain were handy, it was a cinch to hook a small wash basin beside it for convenient clean-up after work outdoors.

Since our machine loads from the front and has the controls there, I was able to enclose it on all other sides. For the work shelf, the exposed end and the door below the sink, I used %" plastic-surfaced plywood. Covered with a coat of good enamel, this can be washed and scrubbed.

The shelf is supported by two-by-fours screwed flat to the two walls. The exposed shelf end rests on another panel of plywood that is fastened at the back to a nailing strip on the door frame. A 16"-by-20" hole in the work shelf takes the lavatory basin. Below this is storage space enclosed by a plywood door

The walls around the unit are covered with theboard attached with waterproof bulleum paste. The tile lines were striped with a different color. An inch clearance all around gives ample room to slide the machine out.—Paul Corey, Sonome, Calif.

Homemade Hamper of Woven Latticework Airs Clothes



This woven latticework hamper makes a convenient place to store soiled clothes and also provides needed ventilation.

The four side frames can be made of X"-by-1" strips. Plywood gussets at the upper corners add strength. Lattice strips X" by 2" can be sheed on a circular saw and allowed to stand in water until pluble. Then they should be woven into four panels, tacked to the inside of the frames, and the frames glued and nailed together.

A \$"-plywood floor fits between the lower frame members. Strips of \$" quarter round are tacked into all inside corners. The lid can be \$" plywood or 1" stock hinged to a narrow piece at the rear. Strips added along the two slanting edges and across the front form decorative sills. Paint the hamper in bright colors.

Foil Protects Portable Radios

Wrap batteries or power packs in aluminum foil before installing them in portable radios. This will protect the set from damage if the batteries should corrode or leak acid. —Donovan Merry, Hillsboro, Ill

194 POPULAR SCIENCE

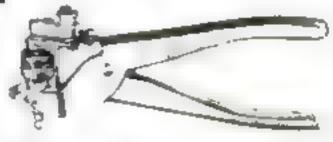


New for Your Car

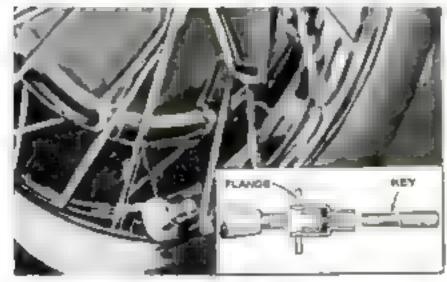
1. Heating Pad Plugs in Dash. You can keep your back warm while driving with an electric heating pad that plugs into the cigarette-lighter socket. Designed for long trips where the regular heater might cause drowsness, the pad works on any six-volt system.



2. Tire Chains Slip
On. You can put on
these skid chains without jacking up your
car or fastening any
connectors. Each
chain is fixed to a
spring-steel band that
clamps over the tire,
holding it on.



3. Pliers Set Plug Gap. Gaps from ,022" to .040" can be set automatically by rotating the wheel of these pliers to the proper prong, slipping the prong between the electrodes, and squeezing.



4. Locks Foil Thieves. Wheel disks and wire-wheel inserts can be protected with thre-valve locks. A key is used to screw a flanged locking cover over the regular valve stem. The lock turns freely on an insert (sketch), preventing removal.



5. Timer Works on Six or 12 Volts. You can't make a wrong hookup in connecting this timing light to either a six- or 12-volt system. A relay automatically selects the correct voltage. The light is also said to have increased brilliance.

Further information on their products can be obtained from: 1. Dimensional Products, 166 2nd Ave., NYC 3; 2. Automic Non-Skill Chain Co., 330 Fifth Ave., NYC 1; 3. Clark Feather Mig. Co., Ft. Morgan, Colo.; 4. Spencer Specialities, 3305 Wilshire Blad., Los Angeles 5; 5. Allen Electric Equipment Co., 2101 2117 N Procher St., Kalamazoo, Mich.



Gus Goes Hunting L...for Trouble

The tall Texan had bagged the biggest buck Gus had ever seen, but his tongue was just as sharp as his shooting.

By Martin Bunn

Gus had a car up on the rack, and he was working with the swift efficiency of long practice, but his thoughts rouned elsewhere. Tomorrow was Thanksgiving Day. And though Stan Hicks, his helper, had kidded him unmercifully about it. Gus just had a crazy hunch that he was going to win that turkey raifle down at Schutzheimer's meat market.

If he did, Sam over at the lunch wagon had promised to cook him a big turkey dinner with all the fixin's—which would help a little to make up for Gus's disappointment about something more important. This year, for the first time since he could remember, he had not been able to get away from the Model Garage during the deer-hunting season. And what Gus really craved was a couple of days' hunting—and a nice big juicy venison steak.

The phone rang. Ah-hah, thought Gus, maybe that was Karl Schutzheimer now—to tell him he was the lucky winner of a plump gobbler.

The Model Garage Gets an SOS

It wasn't. Instead of Karl's familiar explosive accents, the voice on the phone came over as a lazy drawl.

"Howdy . . . Gus Wilson?" It rolled out slow and easy. "This here is Bill Harvey of San Angelo, Texas. I'm a few miles out of town at a farmhouse on . . . let's see. I got it written down here . . . it's Eye-thacka Road. Need a tow truck to haul that lizzie of mine in. She won't run for hoot not holler!"

"All right, Mr. Harvey. Whose farm is it?"

"Folks named Peeble—they told me to call you. I'll be standin' by their mailbox."

"Okay. I'm on my way." Gus hung up. "Stan, take over while I go out on a call. And when Karl phones about my bird, tell him I'll be back."

"You better go buy one, boss," Stan chortled. "Somebody may give you the bird—but I bet it won't be a turkey!"

Gus glared good-naturedly and backed the truck out.

Texan Has Killed His Buck

Ithaca Road, or "Eye-thacka" as the Texan called it, can north from town. It was more or less in the farm country at the edges of the heavily wooded hills bordering the area. The road was clear—there had been only a couple of snow flurries up to now—and Gus knew where the Peebles lived, so it only took a few minutes to get there

He found Bill Harvey standing, long and lean and looking like a piece of sunburned leather, near the Peeble mailbox. Harvey was spattered with blood from shoulders to knees.

Gus squealed to a halt and jumped out.
"You didn't tell me vou'd been hurt!"

"Shucks, Mr. Wilson, I am't hurt. This here's deer blood. Reckon I got it all over me hauhn' that buck down the mountain to our car."

"You had me worned! Where's the car?"

"Up this side road a couple of miles. Had to walk down here. Lost a lot of time doin' it. And I gotta get that buck into town by five this eventn' or we won't win the contest!"

"What contest?"

"The one the Chamber of Commerce over at Parsonsville is runnin' for the biggest buck killed in the county durn't be day. And I'll roll a frijole from here to Texas if we don't have the biggest doggone buck you ever laid eyes oul Besides, that prize is a hundred bucks. Pretty good odds, eh? A hundred bucks for just one buck." Harvey grinned expansively at his own joke.

Gus Takes to the Hills

Gus recalled Stan's bewhiskered gag about the turkey—this seemed to be a day for corny bumor.

"We've got plenty of time to low her in. Not quite three yet."

He climbed behind the wheel, Bill Harvey

got in and they drove on up the road.

"Came up here from Texas to spend the holidays with my boy Pete and do some huntin'. He lives over in Parsonsville with his wife and two kids. Well, we sure got us a king-size deer anyhow!"

Gus nodded, and kept an eye on the clock until two miles had ticked off. Shortly after that

Bill Hurvey told him to stop "Right here'll do. This here trucks too big to squeeze through where my jeep went."

"You mean she's off the road?"

"Yep. She's another half-male or so up the bill."

"Nothing to do but go up and look at it. I guess. Unless you want to earry that deer down and take it to the contest in my truck."

"No, don't think that'd work. Luggin' it florough the brush would take from now until Toxas recognized the United States! That buck is the granddaddy of 'em all!"

"Well let me grab my tool kit. You lead the way,"

Harvey set off at a long-legged pace and in a ball-hour, after pushing their way through brush up a steep slope, they reached the jeep. Harvey's son, Pete, the spitting image of his old man, stood by a front wheel. In the back of the jeep, its head and rear legs extending over each side, was the biggest buck Gus bad ever seen.

"We got a mechanic now, Pete. This here's Gus Wilson,"

Gus shook hands with Pete and when he caught his breath, began looking under the jeep's hood.

"She died and wouldn't start again. We had it up farther and around the hilk may be another half-mile. She got warm running up and down over this rough ground. I thought may be she got a vapor lock, but changed my mind when coolin' the carburetor with water didn't do any good. We got her to run again for a short time, after she sat a while, just before I started lookin' for a phone. But she quit for sure then."

"I see. We'll have you out of here soon,

with any luck at all."

"Mister, I hope so. Winnin' that contest means a lot to my boy and me. And we're mighty auxious to tote this buck home and

show the folks. Maybe you're a hunter yourself and know what I mean."

Gus knew what he meant. He gave the peep a quick once-over. The engine was dirty with the oil and grime of thousands of miles But on that first examination. Gus found nothing that would cause the engine to fail.

There might have been a vapor lock, and

Gus lut the starter to make sure before going any further. The engine caught immediately,

Young Harvey shoved his hat back on his head. "I'll be dogged! It wouldn't do that a few minutes ago!

You might have had a vapor lock, although if Pete here wasn't able to start it up in all that time you were hiking for a phone it would be a pretty stubborn one....

Before he could finish, the engine sputtered and died. Gus hit the starter, but it only coughed, and refused to catch again.

"Just like before," Bill Harvey drawled,

Time Is Growing Short

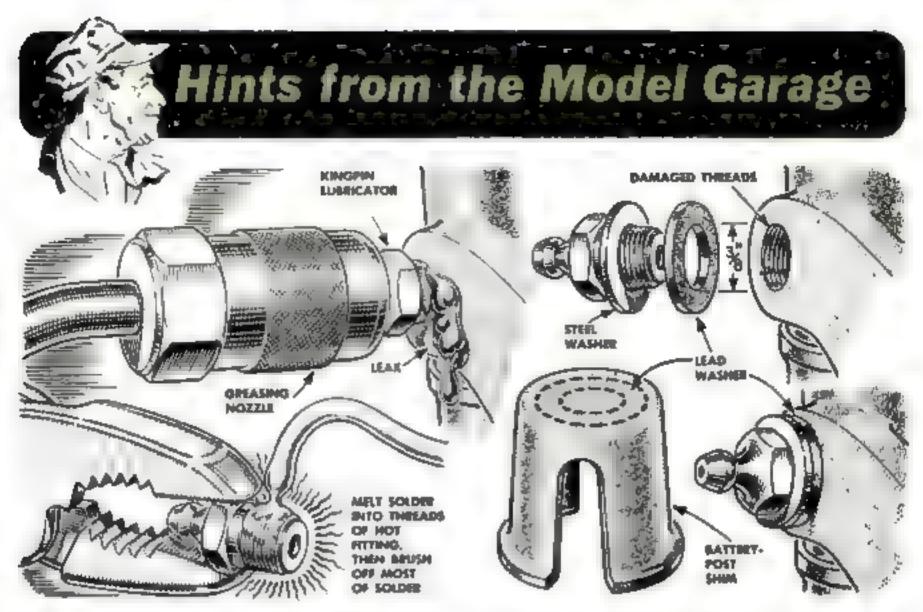
Gus rolled up his sleeves and frowned. He dismantled the fuel pump and made a check. It was another part that should be replaced, but even with a well-worn dia phragm, it was still in operating condition. Replacing it carefully, he went on to examine the carburetor.

The carburetor was loaded with silt, when he got down inside. He had Harvey pour gasoline in a tru can to riuse it out with.

Now try." Gus said after putting it back

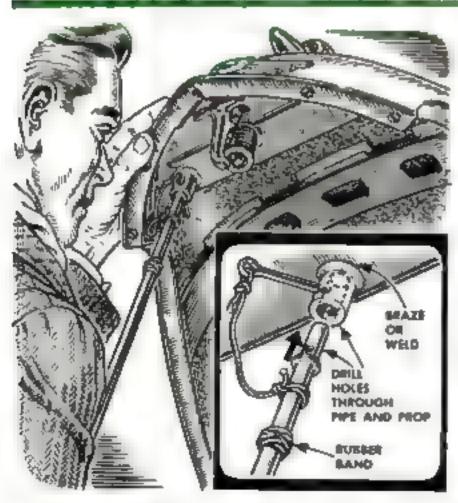
[Continued on page 256]



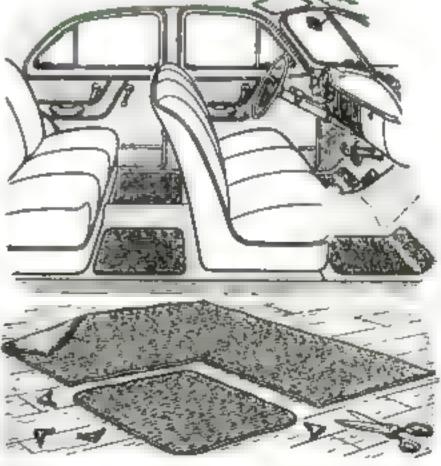


Grease-fitting threads may allow a serious loss of lubricant if damaged. One mechanic has found that this often occurs when new kingpins are installed. In such cases, he removes and heats the fittings, melts solder

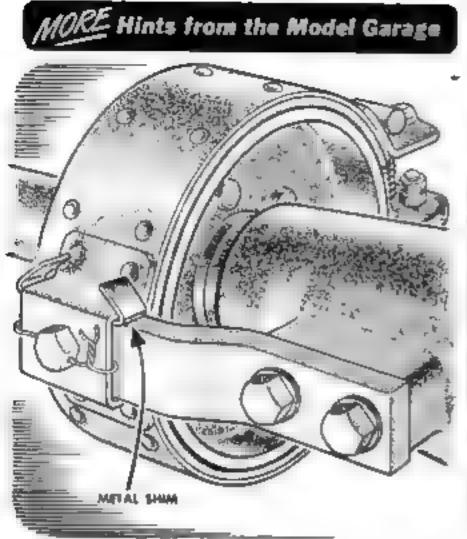
on the threads and brushes off the excess as at left above. Another scaling procedure, shown at right, consists of cutting a lead washer from a battery-post shim and clamping it under a steel washer.

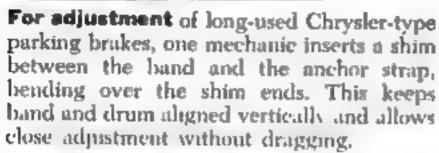


A gust of wind may whip up a raised hood, freeing the prop and allowing the hood to crash shut. A short piece of pipe brazed or welded under the hood is a safety feature to prevent this. Use a rubber band to hold the cotter pin while not in use.



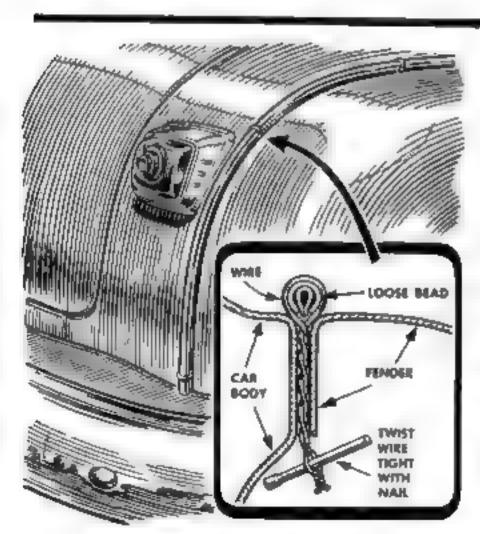
Floor mats cut from an old rug are an economical way of replacing worn-out rubber mats. Cutting off the corners helps prevent fraving and raveling. Most of the sand and dirt lodged in the rug mats can be removed by periodic shaking.







A discarded plastic tablecloth makes an ideal temporary seat cover when you must drive in dirty and greasy clothes or while you are doing a car-repair job. The next time you see one in a trash barrel, rescue it and store in the luggage compartment.



If the beading pulls away from the joint between body and fender, you can pull it back in place with a short piece of soft noncorrosive light-gauge wire, perhaps Monel, Put a nail through the looped wire under the fender and turn to tighten.



A durable antifreeze tag for attaching to the radiator can be made by cutting the brand name from an empty can. Paper tags ordinarily used to show what's being used and warn against draining have a habit of falling to pieces if they become wet.





1, "Stone" Wall Brushed On. You can give a wall the look of flagstone or brick without the cost, weight or labor involved in masonry. A ready-mixed, plaster-like

compound is brushed over scrap-wood strips nailed to the existing wall in the desired design. The compound comes in a beige color, but may be tinted or painted.



Weather Strip Sticks On. You don't need a single tool to install this bronze weather strippingjust pull the protective paper off the adhesive-coated back and press the stripping into place where you want it. Kel-Eez comes precut to fit standard doors and can be bought by the foot for installation around windows.

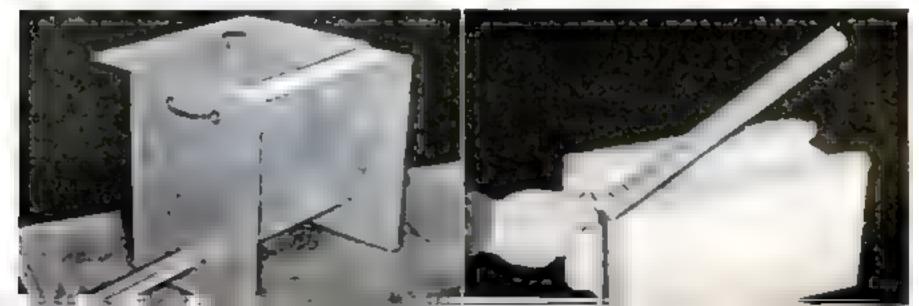


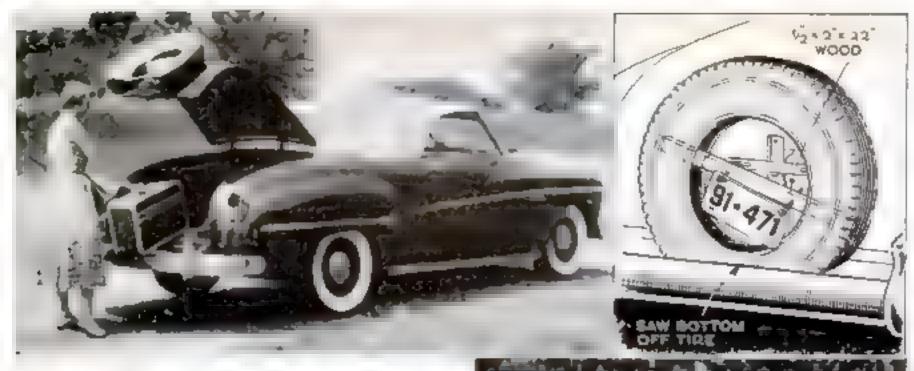
3. Plastic Tile is Flexible. Textured to resemble bamboo, new plastic wall tiles can be cut with scissors and bent around sharp corners. They can be set with adhesive over plaster, wallboard or plywood.

Further information on these printeds can be obtained from 1. Huntstone Co., Box 953, Severty II do Calif.; 2. Kunkel Prodh 14, 325 S. Main St., Akron, 3. Baita Penducis Suies, Laurence, More, J. John Lamm, R.D 2, Bux 265. Kent, Ohio.

4. Trowel Measures Mortar. Cetting the is easier with a channeled trowel that holds a ribbon of mortar 1" square by 16" long-

just right for one concrete block. The Speed right amount of mortar in the right place E-Z is filled by inserting it in a hopper dispenser, emptied by up-ending it along the edge of the masonry.





Dummy Tire Gives Custom Look

CAR owners who like the stylish look of the old Lincoln Continental can have it at practically no cost. I used a discarded 6.70-by-15 tire that had worn smooth, a stick of wood, a chrome wheel-run insert for a 6.00-by-16 tire and two 4" bolts

I sawed off the bottom of the tire to rest flat on the gravel shield, giving the appearance of being recessed in the shield. Next I drilled two holes in the wood to match those in the license bracket on my 1949 Dodge and inserted the stick in the tire as shown in the sketch. I then bolted this

assembly and the license to the bracket on the deck hd. After cutting the rim insert, I sprung it into place on the tire bead and painted the tread area of the tire black. -A. W. Baldwin, Washington, D.C.

Bracket Holds Trouble Light



To keep my automobile trouble light
within easy reach, I
serewed a cup hook
into the side wall under the dash and hung
the light on it. The
handle is held by a
radio-tube clamp, and
the cord wound neatly
on a cleat bent from

20-gauge aluminum. I also cut off the plug that fits the lighter socket and wired the light permanently to a hot terminal and ground. The light is ready for instant use. —Plulip E. McCafferty, Fort Bluss, Tex.

Outboard Can Fuels New Car

You can't pour gas into some of the new cars that have a horizontal filler pipe at the rear. In the event I run out of fuel I carry an outboard motorboat fuel can. It has a hose that can be pushed into the filler pipe—Harry Gottlich, NYC

202 POPULAR SCIENCE

Tightener Ropes Wood to Truck

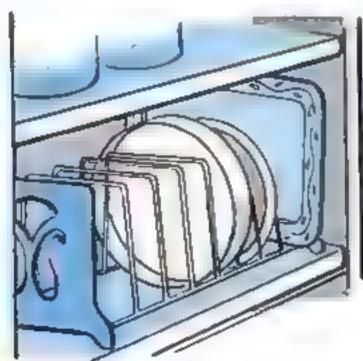
To trelumber safely atop a rack on a pick-up truck, a California contractor designed the quick-acting rope tightener at the right. The rope is half-hitched around a short projection welded on the rack cross bar. The swinging U is



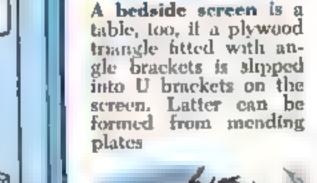
then levered down for tightening. With the U past lower dead center, rope tension locks it, but for extra safety a pivoted bar on the supporting post drops over to keep the lever from swinging back.







A record holder makes a good rack to keep trays and flat pans upright in a kitchen cabinet.



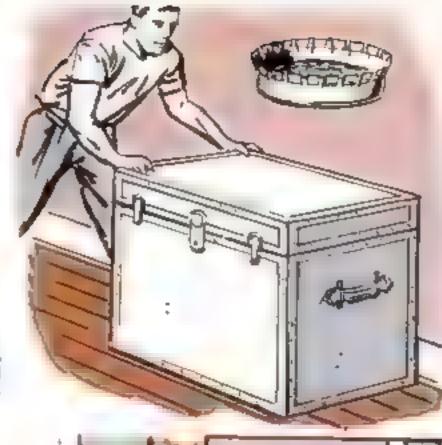
No fishing is necessary if small parts go into cleaning fluid locked in a percolator basket. A rubber band and two matchsticks will anchor the ltd.





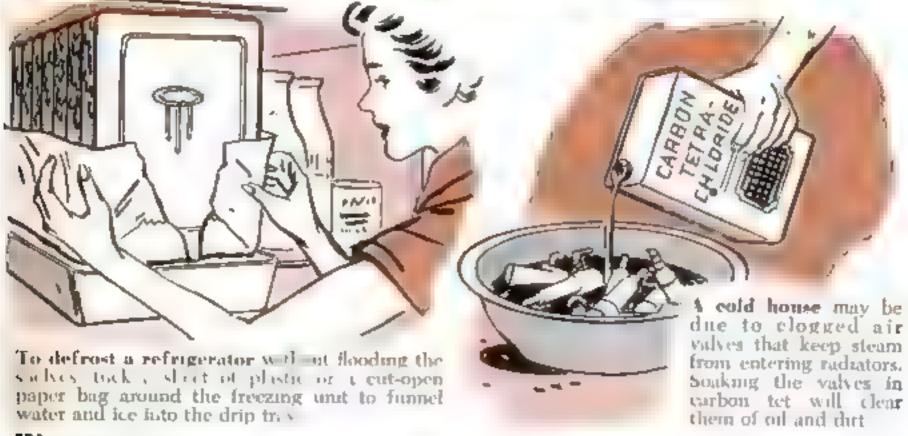
When yet sanding or removing paint from flat surfaces, an old windshield-wiper blade is handy for scraping away the sludge, it also helps show up uneven as in the surface

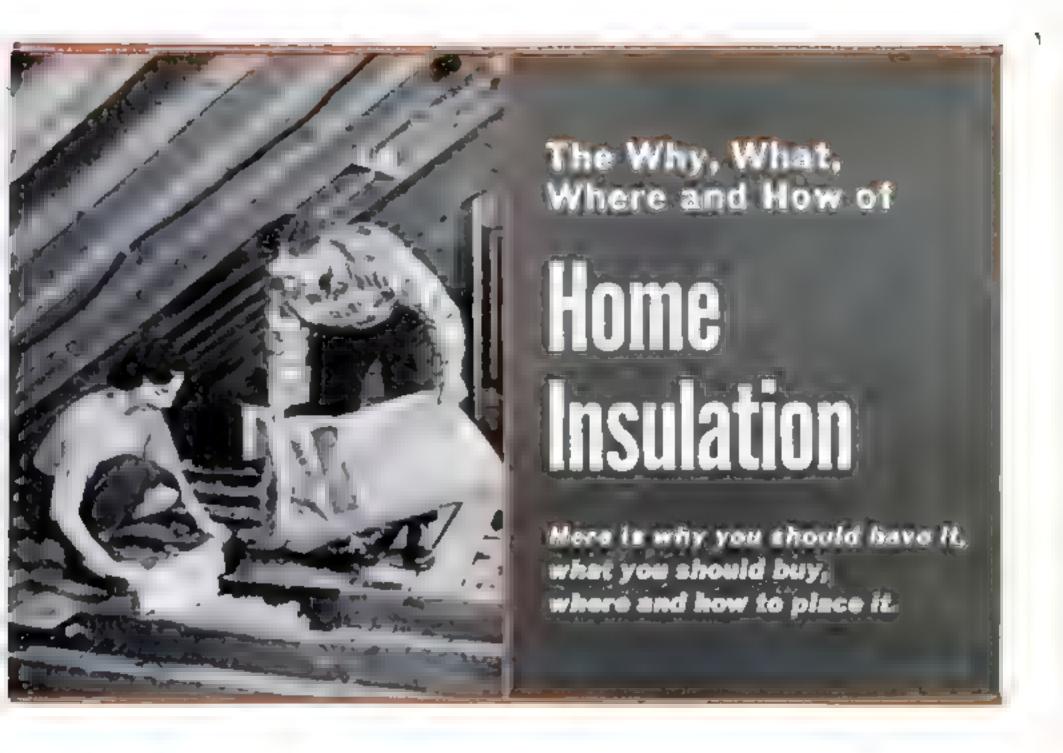
Save your back by shpping bottle caps, crauped side an underneath heavy trunks and cases. Then slide the load along the floor instead of lifting it.





Tip for hanging a cabinet: Bevel a wood strip to 45° and nail to cabinet back with hevel facing down. Level a matching strip on wall, hevel up. Lut cabinet, slide down wall intil bevels meet, nail cabinet and it will be level. If back is not recessed as shown, add strip near bottom edge to keep cabinet vertical. Place strips over gaps to scal out dirt.





By Paul Corey and Darrell Huff

THE remarkable thing about insulating your house is that eventually it won't cost a cent. The money you put into it will come off your fuel bill, usually within just a few years. You'll also pick up a bonus in free comfort every month of the year.

From University of Illinois figures you can calculate how quickly insulating your home will pay for itself. Savings should stack up like this:

•One-story frame house: walls, 13 to 15 percent of your annual fuel bill; ceilings, 22, storm sash, 15

Two-story frame house: walls, 19 to 23 percent; ceiling, 13; storm sash, 18

• Most masonry houses: savings are substantially greater because of their heavier heat loss through uninsulated walls.

 Summer air conditioning: your savings will be even greater.

Where to begin? Usually the first thing to insulate is the ceiling. It is easiest to get at. Each dollar put into insulating overhead will save you more on fuel than if it were spent on side walls.

Ceiling insulation also helps a lot in keeping the house cool in summer.

Whatever your insulating problem, there are probably several products made to solve it. No one kind is best—but there may be one that will do more for you than any other for each dollar you spend. The "how to buy and apply" chart on the following pages is your guide in this.

Many types available. For insulating a ceiling from above you have a wide choice. You'll find what you want among the loose fills, blankets, batts, reflective or combination types.

Perhaps you want to insulate side walls in an existing house without disturbing the present walls. That calls for one of the loose fills. Where study are accessible, you can use one of the other types.

If you want to get a moderate amount of insulating value along with finished walls or ceilings—all at low cost—use one of the insulating planks, boards or tiles.

One big problem goes along with insulating a house—controlling the moisture that causes destructive condensation. So read about this on page 210 before selecting your insulation.



Description

WOOD FIBER comes in bales, expands when opened.

MINERAL WOOL (rock, sing or glass) comes in sacks.

VERMICULITE is expanded mica, It comes in bags

Good type for...

...spreading on attic floors; packing between wall studs. . . . pouring onto attic floors where insulation usually is needed most. May be packed into irregular spaces and around paper. Mineral wool and vermiculate are excellent for insulating walls of existing homes.

Advantages

Can fill well space completely, giving extra lesulation and fire protection Usually teast expensive and most widely available. Easy to use.

Very easy to pour. Excellent for filling hollows in mesonry walls.

Drawbacks

Provides no vapor barrier. Not so widely available as some other types. May irritate akin or mouses when being used. Provides no vapor barrier.

Provides no vapor barrier. May be slightly more costly than some loose fills.

How to

Pack between joints or studs, as below Vaporbarrier paper may be added if needed. For ceilings, pour insulation as shown below. Rake it level with tops of joists or to uniform lesser thickness with home-made cardboard tool. To fill walls of existing buildings, remove siding and sheathing at top of wall and under-windows to pour.





BLANKET



MINERAL-WOOL blankets may be rock, slag or glass wool.

WOOD - FIBER MATT comes in long rolls completely enclosed in paper.

COTTON insulation comes as a flameproofed blanket.

FIBROUS BLANKET is sold as a compressed roll.

... use where training is exposed. All blanket types may be used over cellings, inside rafters, or between study in side walls. Rolls may be cut to whatever lengths are needed and then installed in continuous lengths without joints, providing an unbroken barrier to heat and moisture.

Inexpensive, widely available, give continuous vapor barrier. Efficient, made in variety of widths for different studspecing. Lighter weight and higher efficiency than most types. Very clean to use.

Compact to carry, nonirritating, easy to cut and handle, may be cut to odd widths.

Must be cut to size. Particles may irritate skin or nose during installation Necessity of cutting makes blanket type less conventent for short lengths. Somewhat more expensive to buy than most mulaOrdinary type may need added vapor barrier in cold chimates (Reflective type has barrier.)

Staple or tack into place between raften, study or joists. For greatest efficiency insulation should how in enough to form an air space between blanket and wail on each side. Center picture below shows how the nailing flange on the edge of most blankets forms a continuous vapor seal.

First expand by pulling to full length. Then cut and install like other blanket types at left



Please turn the page for more about insulation.

NOVEMBER 1953 207



REFLECTIVE

COMBINATION





ALUMINUM powder (dull) building paper.

where stout paper with some reflective value is wanted.

Excellent vapor barries and weather seal plus some insulation - at low cost. Tough, easy to use.

Usually not adequate insulation by itself. Gives less soundproofing than bulk types.

Single-layer foil insulations can be tacked or stapled between study or joints or over the faces of them. They should be bowed in to form two six spaces. Second layer may be added for more insulation.

ALUMINUM FOIL in rolls (surface is shiny).

against heat of summer

Excellent vapor barrier. Moderate cost. Very efficient against heat from above.

Less efficient at keeping heat in than keeping it out —especially in ceiling. Cannot be installed after wall is finished. Costs more

than many bulk types.

MULTIPLE FOIL in two

to four layers comes in

.. anywhere that framing

is accessible. Especially

Light and compact to car-

ry, clean to handle. Small

bulk lets house cool quick-

y in summer.

good in hot climates.

rolls.

With vapor barrier toward room, along one edge, Staple other edge after pulling to separate layers. Then staple ends, BLANKET WRAPPED in aluminum foll for double action

go. Top choice where temperatures are extreme both summer and winter.

Insulation is fully protected, with vapor barrier. Foil reflects radiant heat, bulk stops conduction

Combination type costs more than most bulk or reflective types alone.

Staple at sides (and preferably at ends too) between framing members. Method is same as for plain blankets.





What You Can Do About CONDENSATION

The unseen moisture that can wreck a house has many sources. Here are some simple ways to prevent condensation damage.

By Martin Mann

GRANDPA probably never heard of condensation. If paint peeled, plaster stained or timbers rotted, he knew there was a leak in his house. Leaks we may still have, but today those signs of trouble can also point to condensation, an affliction most likely to be serious in new, tightly built, well-insulated homes.

What is it? People often call condensation sweat, or steam. You see it as drops of water on a cold-water pipe on hot, humid summer days or as fog on the bathroom mirror after a shower bath. The pipe and the mirror are relatively cold, the air nearby is warm and loaded with water vapor. When the warm, moisture-filled air is chilled by the cold surface, some of its invisible water vapor changes into visible hand water. That's condensation.

The condensation you can see on a mirror or pipe seldom burts anything. It's the condensation you can't see that makes the trouble. Usually it is inside walls: warm,

damp air passes through plaster or wall-board and hits the cold outside sheathing, the moisture vapor condenses to water on the inner surface of the outside wall. The water can soak through the outside wall and peel the paint, it can drip onto structural timbers and rot them, it can seep back through the inside wall and damage the finish or even break loose a section of plaster. Other danger areas are the underside of roof sheathing and the underside of flooring over a damp basement.

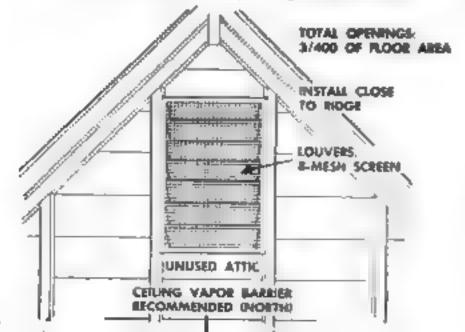
The moisture comes from everyday living: cooking, laundering, bathing, even breathing. In Grandpa's big, loosely built house it was easily absorbed or harmlessly leaked outside. Modern houses are small and tight. Usually they are insulated, which aggravates the problem by making inside walls warmer and outside walls colder and thus increasing the chance of condensation within the walls.

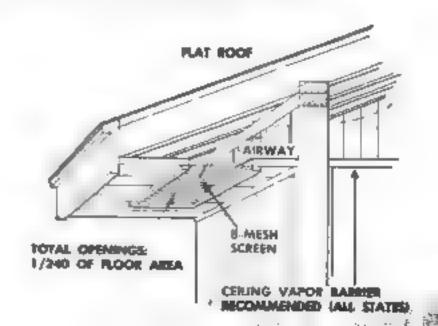
Symptoms. If your windows steam up heavily and frequently during the heating season, the air in the house is too moist. If

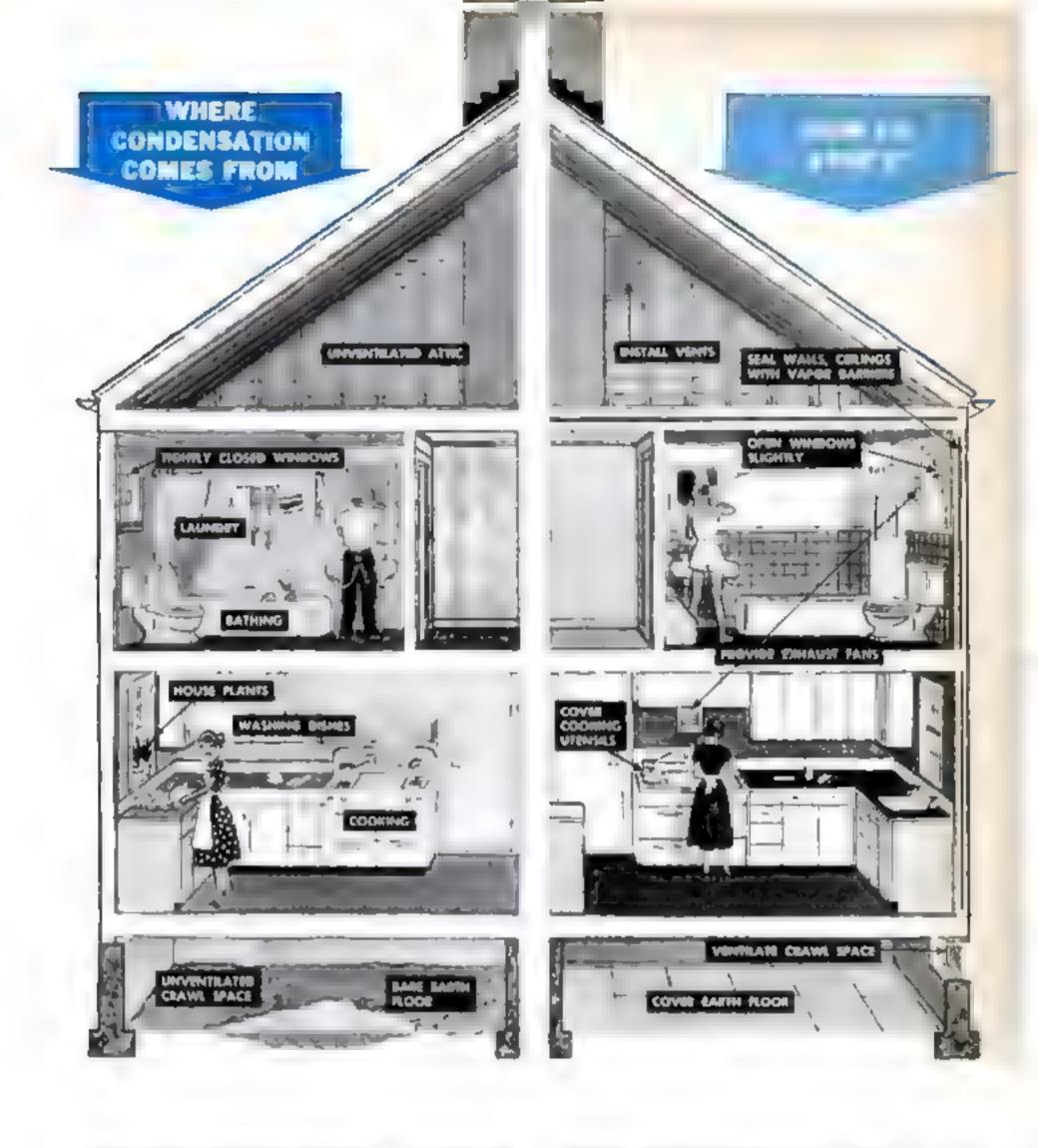
VENTS LET MOIST AIR ESCAPE

OABLE VENTS are used alone with pitched roofs enclosing unused attic space. Inexpensive ready-made units of wood or metal are widely available in many shapes and sizes.

VENTS UNDER EAVES are used alone with flat coofs (pitch less than 3" per foot). A narrow vent full length of caves is considered more effective than separate wide vents,

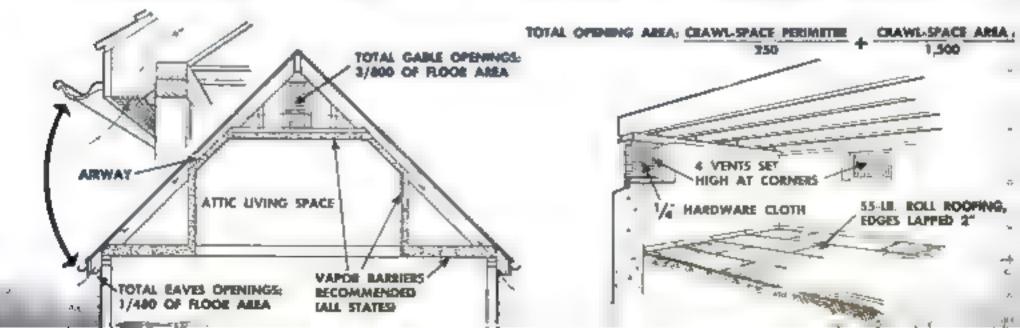






SOTH GABLE AND EAVES VENTS are needed with pecupied attles or hip roofs. Their size is based on area of the first floor, not area of the finished rooms in the attre.

corner foundation vents protect crawl spaces. Vents can be louvered openings, or masonry blocks built in sideways to expose hollow cores, Earth floor should be covered.



CONDENSATION

you have storm windows and this happens, things are worse yet. Better look for damage-paint peeling inside or outside, interior finish stamed, actual rot or dampness on roof rafters or foundation sills. If you find it -and can rule out leaks as a cause-condenention is at work.

What you can do. Getting the extramoist air outdoors where it cannot hurt anything is the first step. Such simple things as opening the bathroom window when you shower, or convincing your wife that she should cook with the kitchen window open a crack (and with pots covered) will help a lot.

It open windows let in too much cold, air, you might want to install exhaust fans or electric dehumidifiers in troublesome rooms such as lutchen, bath or laundry.

Install permanent vents. These intentional holes in your house keep dry outside air flowing through spaces where condensation is likely. They are a necessity in tightly built modern houses-even in the South. Most new homes have some, but seldom big enough and seldom in all the right places. Adding more, however, is a simple job for the amateur carpenter. Don't make the mistake of closing off vents to save fuel in winter. Cold weather is condensation weather and that is when you need the vents most.

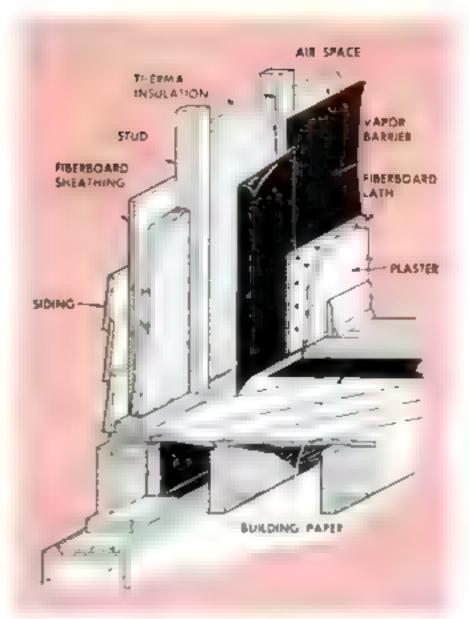
If your house has a gable roof enclosing an unoccupied, unheated attic (insulation in attic floor, not in the roof), louvered, screened vents near the ridge at opposite gable ends will do the job. For any other roof-attic armingement, additional vents are

needed in the eaves.

All vents must be interconnected with unobstructed airways to permit a free flow of outside air. In the unoccupied-gable-roof case, this is simply the attic itself. In other arrangements the airway is the space between rafters, and any insulation installed there must be placed carefully to avoid blocking the airway.

Houses built over crawl spaces also need vents at the foundation corners. These vents must be sizable if the crawl-space floor is bare dirt, but can be reduced 90 percent by covering the earth with water-vaporproof material -concrete or roll roofing.

The walls themselves are also being



VAPOR BARRIERS seal walls against moist inside air. They must be carefully installedrips or openings around electrical outlets and windows reduce effectiveness. They are often needed even if insulation is not used.

vented in many houses. You can buy small units that plug into holes drilled through siding and sheathing. Although no official specifications for wall vents have yet been made, the Government's Housing and Home Finance Agency suggests 1" of opening per running foot of wall at both top and bottom.

Provide vapor barriers. These stop moist air from getting into wall and roof spaces. They are usually sheets of asphaltimpregnated paper or metal foil and should be installed on the warm side of insulation when the house is being built. Many brands of blanket and batt insulation have a built-in vapor barrier on one side.

Paint is also a good vapor barrier-and about the only kind that can be provided after a house is finished. For a paint vapor barrier, the Government's Forest Products Laboratory recommends one coat of aluminum primer followed by two decorative coats of flat paint.

Tape Guards Razor Edge

Masking tape folded over the unused edge of a double-edge razor blade will let you cut elippings or model parts-and not your fingers.-S. Rouse, Knightstown, Ind.

YOU DON'T HAVE TO HUNT for the Chevron's shutter release—it's the long, pivoted bar under the girl's forefinger.

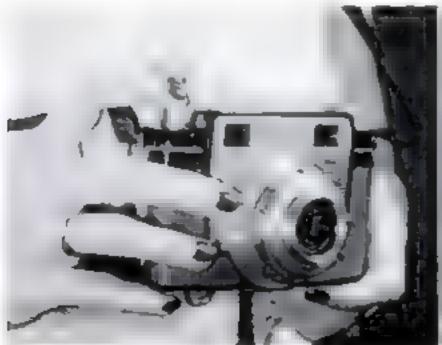
THE picture-making versatility of big cameras is packed into a new hand-held roll-film job. Its Ektar f/3.5 lens and one-to 1/800-second shutter with built-in synchronization for class F, class M or strobe flash lamps take care of all lighting conditions. The coupled range finder is accurate to 1%" at 4'. Among the luxury touches in the new Kodak Chevron is the view finder, it always shows the exact area covered by the lens, it adjusts for people who wear glasses, it has a built-in mask for use with an accessory back that takes small-size

New Work Horse for Cameramen



tever sum advance is easy to use even with flash attached. The Chevron makes 12 pictures 2!4 "square on a roll of 620 film.

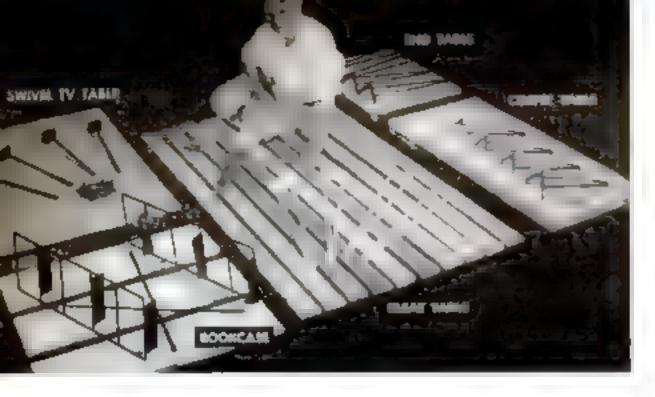
For less well-heeled photographers, Eastman is also introducing two other new cameras (below). The Brownie Holiday is the first camera selling for less than \$5 that the company recommends for color shots. New manufacturing techniques that achieve high precision at low cost did the trick. The Bantam RF is a new lightweight miniature with coated f 3.9 lens, a coupled range finder similar to the Chevron's and a 1/25- to 1 300-second synchronized shutter. Price, with flash and case, less than \$80.



FINGER GRIP for focusing and big shutter release on top make the Bantom RF a simple miniature to operate.



THERE'S NOTHING TO ADJUST on the small, rugged Brownie Holiday—just push button on top. Focus, light opening are fixed.



A beginner's story with a happy ending —for both the novice and his wife.

By Henry O. James

"DARLING."
I looked up from my newspaper.
The tone of my wife's voice told me that I was in for something.

"The Marvins," she continued, "have just bought some of that new wrought-iron-leg furniture that's all the rage. I was over to see it this afternoon. It's lovely."

"That's nice." I tried to change the subject, "Did you see the piece in the paper



Corky the setter is much more interested in a quick snack than in the cleat table I made. 214 POPULAR SCIENCE



Hollow-door coffee table is admired by Mrs. J. (left). At right of sufa is my end table.

SWIVEL TV TABLE was a great success. I was getting muscle-bound moving furniture; now I am my set with a twist of the wrist.

BOOKCASE was the easiest piece to make. I extended pine boards beyond wrought-rout brackets at each end to make whatnot shelves.





NOVEMBER 1953 215



HOLLOW LOUR PRESENTS PRUBLEMO

MY FIRST JOB was to square the open end of hig piece used for coffee table. Boards to guide the saw are held together by screws through overhang at each side of the door. CHISELING OUT HONEYCOMS to a depth of about 3" was a ticklish task. Here the saw guide serves as a protective clamp so that I wouldn't break through the thin mahogany veneer. Using a solid-core door would have been easier but more expensive.

on winter mulching?" I am an amateur gardener.

She ignored my gambit. "We could do with some new furniture."

"Guess we could," I conceded, "but not that wrought-iron stuff. It's modern and we haven't a modern piece in the house."

"But you don't need a modern setting," she countered, "It will fit in with any kind of furniture. Decorators say so."

"Okay. That may be so, but I'll bet it's expensive."

"Umin, yes," admitted my wife, "-if you buy it."

That startled me. "How else are you going to get it?"

"You could build it."

"Me, build it?" I was incredulous

"You have a screwdriver," said my wife.

"And a can opener," I added.

She handed me a booklet. "I sent for it

to a place out in California that sells these wrought-iron legs by mail," she explained. "It's got a lot of suggestions in it, but we could design our own. I have some ideas. Let me show you . . ."

That's how it started. My wife sketched out some rough designs of what she wanted—a coffee table, an end table, a bookcase, a TV table and a cleat table for outdoor eating; we decided on the types and heights of wrought-iron legs we wanted and ordered them by mail.*

While waiting for the legs to arrive, I went about the purchase of lumber, like a babe in the woods. We had decided on a flush door for the coffee-table top—either oak or mahogany. At my local lumbery and I

The white clear table by the nuthor used came from the Captametal Casp. Conner. V. I. the black regulard hookense brackers from b. F. Low nor tron Wirks. Low Ingeres 23, and the IF table sweet from Simon s. 121 Third Ive. VIC.

BUILDING THE BOOKCASE IS A SIMPLE ASSEMBLING JOB



THREE-FOOT PINE BOARDS made the shelves. To support the boards while I drove screws with the unit upside down, I rigged op crosspiece jigs from lumber scraps. I could have located the brackets at the far ends of the boards. In that case the rear bracing strips would have been fastened in an inverted V position instead of being crossed. Screws were furnished with bookcase brackets and also with all the legs I purchased.

216 POPULAR SCIENCE



source that attach wrought-iron legs, is hammered into hollowed-out end. Buth opening and block were first thoroughly smeared with plastic resin glue. Next my two-hoard saw guide served as a gluing clamp.

HERE'S ANOTHER TRICK. I wanted the legs of the end table as far out as possible but not sticking beyond the corners where people would trip over them. My small try square was not long enough to reach the tips of the legs, so I used a board as an extension.

found a nice solid-core oak door. I balked, however, at the \$35 price. I saw a mahogany door. The man explained that it was hollow, had a honeycomb core. But the price was only \$14, I bought it.

I also hought a headache. Since the 24"-wide door was 80" long, I had the lumberyard cut off one 50" length for the coffee table, leaving a piece plenty big enough for the end table. I was quite proud of this bit of economy. The headache came later.

For the cleat table, since it was intended for outdoor use. I bought five 12' pieces of 1"-by-4" clear cedar. This I had cut into 6' lengths, giving me 10 pieces, which I figured would be ample for both the top hourds and the three underside cleats. Cost. 87.80.

The wrought-iron bookease brackets I had ordered called for three shelves, so I

bought three 1"-by-10"-by-3' clear pine boards. Cost: \$2.34.

By this time some of my wife's enthusiasm was sticking to me. I decided to do something fancy with the TV table—make it swivel. From a wholesale hardware distributor I bought a 7" swivel gadget that could be sandwiched between two pieces of plywood. Cost of swivel: \$2.00.

The upper and lower layers of the sandwich top were to be 24" squares to allow a small overlap with my TV set. The smallest suitable piece of \$" fir plywood in the lumbervard was 3' by 5'. Cost: \$4,50.

What tools? The lumber and the wrought-iron legs arrived at about the same time. I assembled them on the floor in furniture units and took stock of the situation. My wife's quote from the booklet came back to me, "All you need is a screwdriver."

How I was supposed to sand, stain, paint

REDWOOD BOARDS MAKE HANDSOME CLEAT-TABLE TOP

SINCE THE BOARDS WERE ROUGH, I had a big sanding job. Also, the boards were not all exactly the same length; so I had to saw them off even. This I did after the top had been assembled and cleats screwed on. Scraps of %" plywood serve as separators to keep the seven boards the same distance apart. Depth block on the hand drill kept me from going straight through in making screw holes.

NOVEMBER 1953 217

or varnish wood with a screwdriver, I'll never know. But aside from that, I could undoubtedly screw wrought-iron legs and bookease brackets into my wood with a screwdriver. But a hammer would help start the screws, so I added that, and a small hand drill to further simplify things in that department. I knew I had to saw the TV table plywood to size, so out came my handsaw. Then I took a squint at the cut through my hollow door. It had been sawed at the lumberyard and didn't look square. Digging around I found an old try square I had forgotten about. And it was while try-squaring an open, honeycombed end of the hollow door that I realized I would also need a chisel to solve the hollow-door headache

I squared the open end of the 50" coffeetable top by handsawing it back to 48". For a saw guide, I rigged up two pieces of board, top and bottom, held clamp-tight by a couple of long woodscrews. In the same way I sawed the 30" odd end of the flush door in half for a 15"-wide end table.

What to do about the honeycomb? The open honeycomb end remained, however. There were solid pieces of wood set in about 3" deep at the top and bottom of the door and at each side. But that left my leg brackets, at the open cuts, extending in-

ward about 3", with screw holes where there was nothing for the screws to grab into in the hollow part.

To solve that I chiseled out the honeycomb strips to a depth of about 3". Then, I sawed, from a piece of scrap wood, an insert the exact width and inside diameter of the hollowed-out part. I covered the inset with glue and hammered it in, using the sawing guide as a gluing clamp.

Would I do it again? While doing all this I fervently wished that I had bought a solid-core door for the extra \$20. But when I saw the finished products, I wasn't so sure. I was quite proud of the job I had done—and it made for a much lighter piece of furniture.

From there on my problems were fairly simple. Before screwing on the wrought-iron legs and bookcase brackets I sanded the wood thoroughly to clean the edges and prepare it for finishing. And that brings in another item of expense—sandpaper, wood putty, glue, filler, varnish, paint and paint-brushes. Cost: about \$10.

When I brought my masterpieces up from the basement we had to do a bit of rearranging. But they all blended in very nicely with our assortment of conventional and period furniture. They gave our house

You Can Make Legs for Wrought-Iron Furniture

HERE are two ways you can make metal legs for homemade furniture. The coffee table is just a 1"-by-14" plank supported on four 12" lengths of %" pipe threaded at one end and turned into floor flanges screwed to wood wedges. The wedges give the legs an attractive outward splay.

The end table rests on two bent-rod loops, the rear one continuing up to support the back edge of the shelf. For this you'll need 12' of 3/16" mild-steel rod. Measuring from the center of a 6' length, make all bends in pairs to keep them identical. The two main upper rods go down through the lower shelf and are held by slotted mending plates that lock in grooves filed on both sides of the rod ends. The legs are attached with cable straps, and the 3/32" rods are simply set into blind holes in the upper and lower shelves.—Robert Heppough, Chico, Calif





TV TABLE GETS SWIVEL TOP

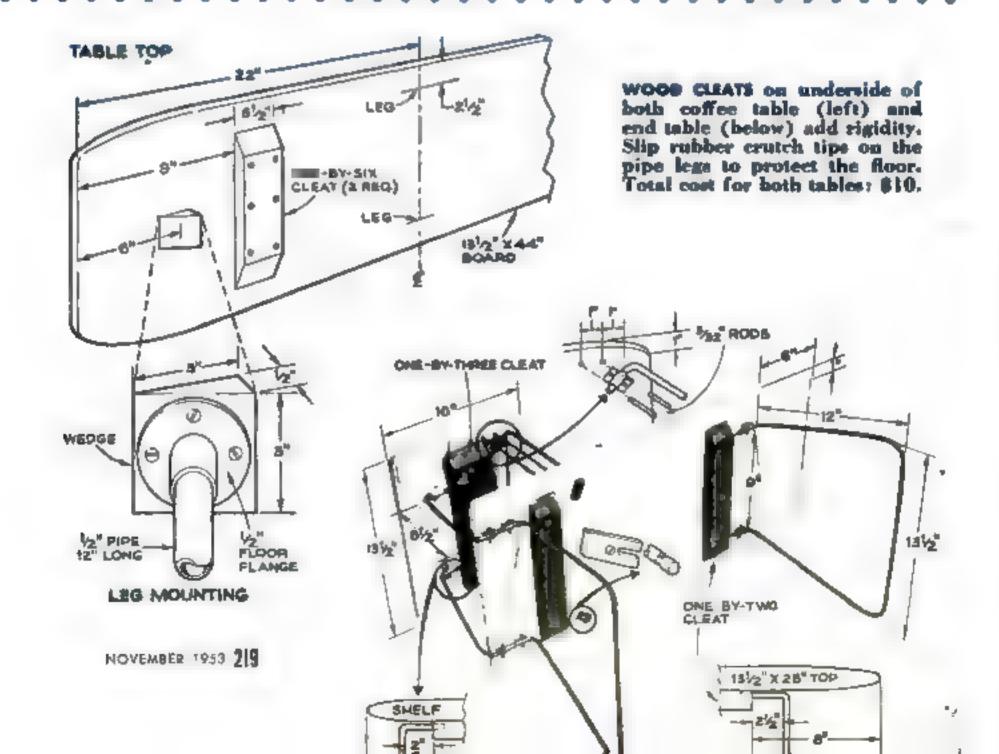
DIAGONAL PENCIL LINES enabled me to position swivel gadget in exact center of 24"-by-24" plywood sheet. Before screwing it in place, however, I positioned it similarly on

a lift, these five new pieces that had cost me a total of \$84.19. Also, it had been funbuilding them.

My wife surveyed the result with a smug smile. "I knew you could do it," she said. "Now we'll have to invite the Marvius over bottom sheet to locate four holes for bolts to hold swivel to lower half of the plywood sandwich. I used long bolts so that I could grip them with pliers while tightening nuts. Top was finished with flat black enamel and the edges with Chinese red enamel.

real soon to see our wrought-iron furniture."

P.S. I am looking through the tool catalogues and planning to set up a real workshop in my basement. And my wife is reading POPULAR SCIENCE lining up projects for me to build. Happy ending?





Weighted Easel Can't Slip

A LEAD plate fastened to the bottom of a photo-enlarging easel will keep it from slipping around on the enlarger base when you insert or remove sheet of print paper. The weight can be an ordinary type-metal printing plate, avail-



able at print shops for little cost, or X"

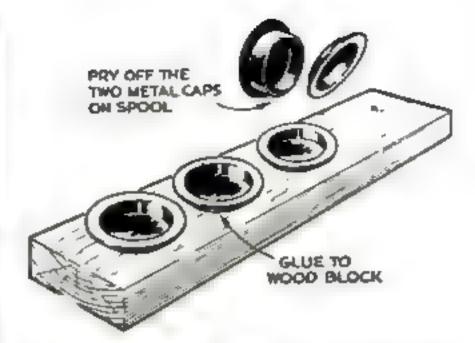
lead sheeting

Fasten the plate with flathead machine screws, as shown at right above, countersunk to give a flat surface.-James Deitch. Los Angeles.

Chuck Key Taped to Power Cord



THERE'S no chance of catching a flying chuck key in the teeth if you tape it to the plug end of the power cord the key must be removed from the chuck before the machine will run. an e dension outist to the motor mount to reake in career to reach the plug and key.-Bob Gimore, Sonome, Calif



Palette Made from Tape Spools

SHALLOW metal caps salvaged from cellulose-tape spools are just the right size for mixing small amounts of water colors. Cement several of them to a piece of wood. -George Kapitan, Bronx, N. Y.

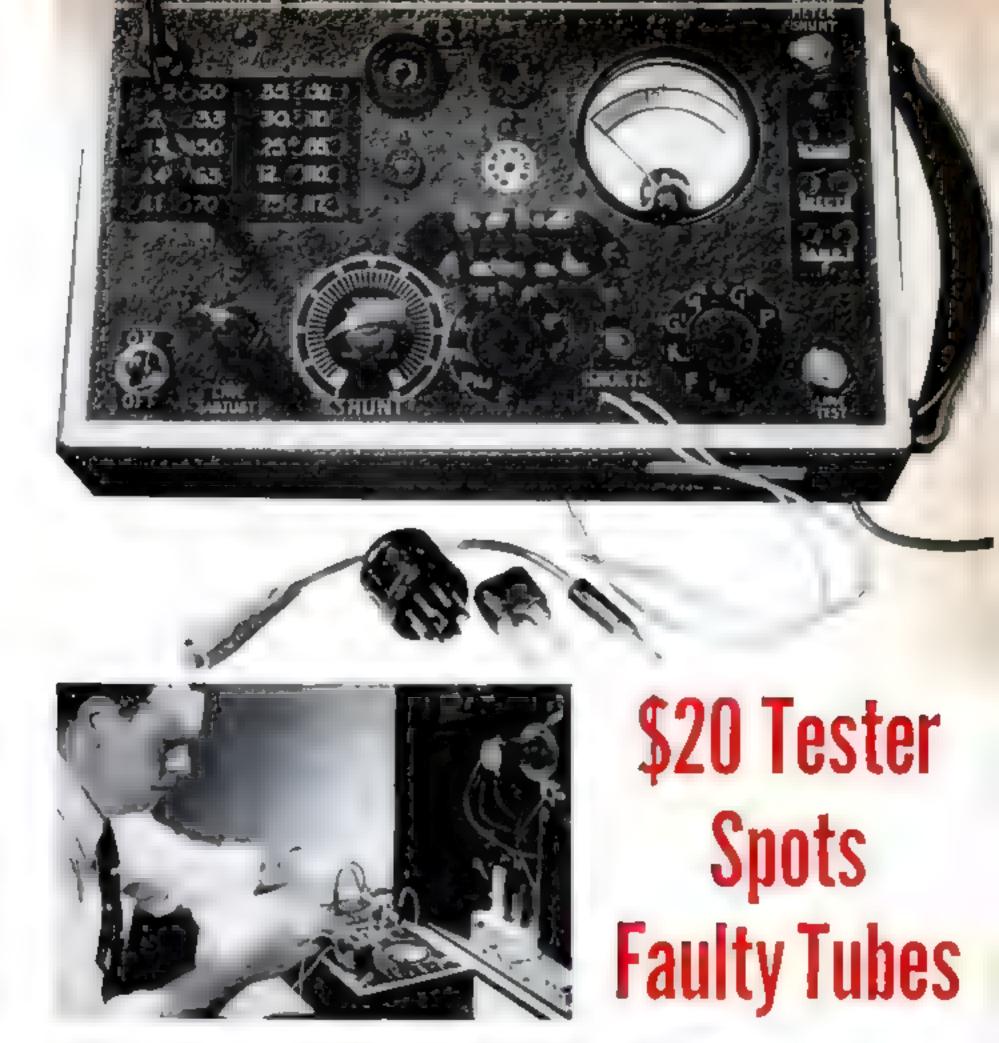
>>> Vacuum-cleaning your typewriter is an easy way to keep dirt from accumulating in it. Go over it first with the open hose, then the long upholstery nozzle.

What Would You Do?



My power tools were so dusty that I got silicosis every time I used them. I started out, finally, to buy covers for the tools, but on the way out of the basement I noticed one of my wife's old housecoats. Now that's all I use as power-tool covers. The wide skirts fit easily over workshop tools and when they are dirty, I just dump them in the laundry .- A. R. Tanner, Cold Spring, N. Y.

Have you pulled off a smart one lately? PSM will pay for acceptable contributions showing ingenious solutions of problems in the home, shop, gorage or camp. It doesn't motier if it's wacky-if it works. Use government postcords only. Contributions cannot be acknowledged or returned



This simple, rugged tube checker works on the same principle as commercial instruments that sell for five times its cost.

By Thomas McQuire

Like the best commercial tube testers that sell for \$100 up, my homemade job measures a tube's ability to amplify, its transconductance. Yet it costs only about \$20.

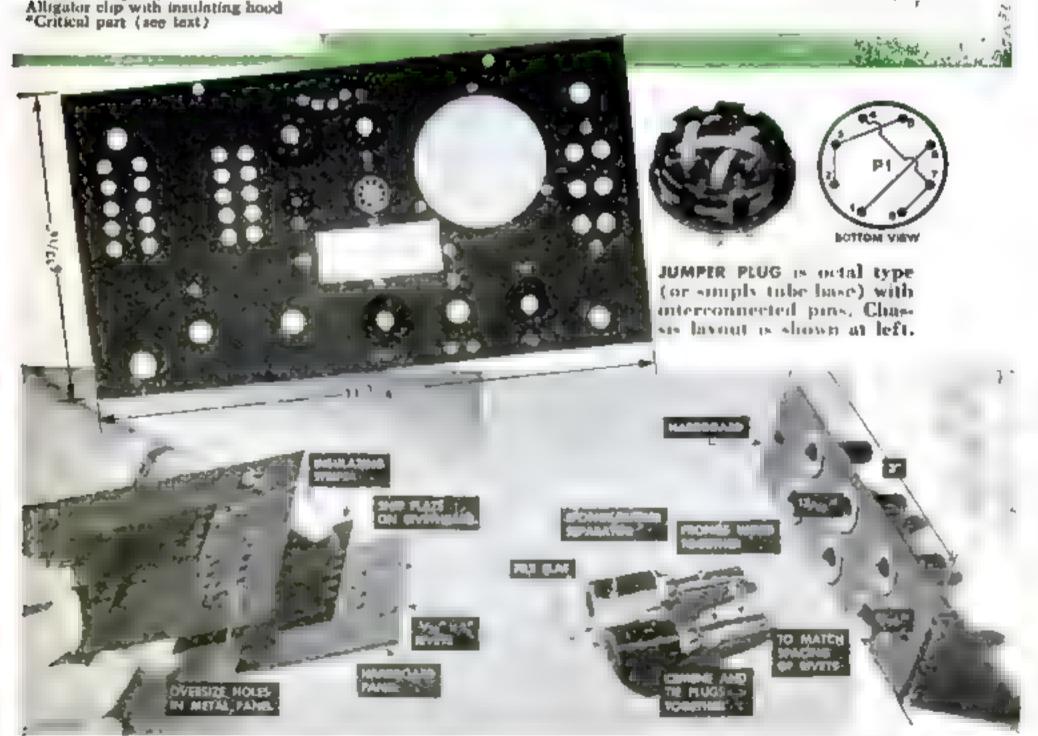
The saving comes from its simplicity. In store-boughten models fancy switches make test connections at the push of a button. With my checker you plug jacks into a patch board according to the instructions in a standard tube manual.

What you need. The transformer is a special type made for tube checkers. The meter is a zero- to one-milliampere DC milliammeter. Other parts are not critical, but if you get resistors R4, R5, R6 and a shunt-control dial plate like mine, you can use the chart shown later on and save the calibration job.

Since resistors may vary 10 percent from coded values, select R5 and R6 by testing several on an ohumeter accurate to five percent, R5, nominally 1,500 ohms, should be 1,400 ohms. R6, nominally 22,000 ohms,

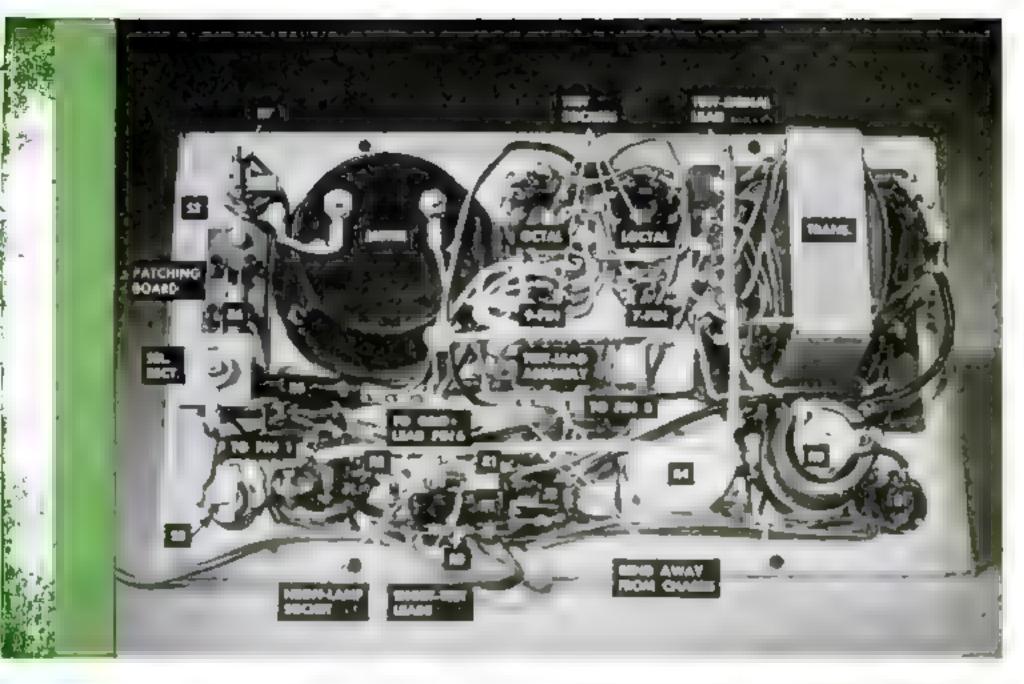
LIST OF PARTS

RI 470,000 obos, I watt carbon R2, R3 100,000 ooot, g-watt Carban *R4 500 alias. 4 wait sharif potentiometer, (linear taper, 279° rotation Madary type M 500-P) *R5: 1,500-ohm, 10-watt wire-*86, 22.000 chm, 2 watt carbon R7, 1 800 phon, a watt carbon h8, 200 phon 25 whR not C1. Land, 400-volt paper \$1: 115-yed; bue swatch \$2, 50 mornaby ope mornaby open push awitches PI; octal plug II., 12 metal mekets Test sockets one each octol, loc-tal, 7-por 9 por asportures Banana poess (4 req.) Banana jacks or 5/32" x ½" tabu-Phone tips (11 req.) 85-mm selenorm rectsier NE-51 neon lamp and socket O-to-I ma meter; extra scale plate Tube-checker transformer (Stancor P-1834-3) Six-lug terminal strips (2 req.) Line cord and plag Phosphor-bronze wire (12') 3" x 7" x 12" metal cabinet with *0-to-100 dust plate, 2 3/16" dus., 295 ° retation (Ohmite No. 5000 or equ(v.)



BRASS RIVETS in hardboard serve as filamentvoltage jacks, each wired to one of transformer's 20 taps. Screw transformer to this panel.

PATCH IG PLUG is interconnected banana plugs fastened together with sponge rubber, cement and twine.



should be 20,300. Buy the shunt control and dial plate listed

Assembly. After the layout as necessary to make the parts fit easily on the metal chassis panel with a his margin around the edge. The meter is fragile—try it for fit, then put it uside.

Wire the four test sockets first, booking their pins in parallel. When you were octal socket J1 to the 7.5-volt transformer tap, use

THE PARTY OF THE P

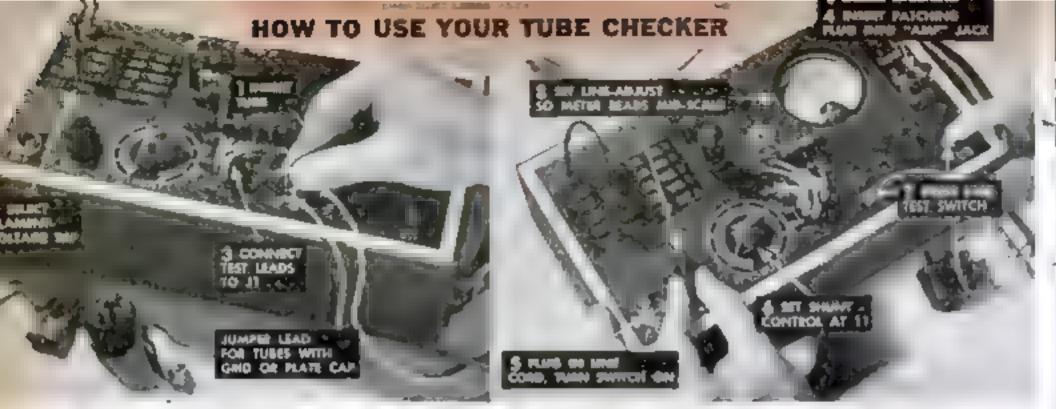
RUSAER BANDS on frame retract test leads—phosphor-bronze flexible wire. Tinning wire at point to be cut prevents it from unraveling.

heavy bus wire Cover the lead with insulating spaghetti and bend it to stand 2" away from the chassis. This lead earries the test-signal voltage: spacing it this way keeps it from picking up false signals. Use a similar bus-bar and spaghetti connection between pin 6 on J1 and pm 5 on J2

Note that J1 and J2 are connected to two contact jacks at the top of the panel marked P and G. These external plate and grid terminals are provided for tubes that make these connections through top caps jostead of socket pms. Insulate the two jacks from the panel and make a short jumper wire with a hamana jack and an insulated alligator clip.

Prepare a new meter scale marked at the mid-point, one-tenth of the way to the left and two-tenths of the way to the right

Calibration. The chart gives you calibration points for most common tubes. If you want to test a tube not listed (or if your checker varies from the specifications given), use a good tube of the same type to establish the calibration. Run it through the regular test procedure up to step 10. Then adjust the shunt knob until the meter reads about 70 percent; the shunt adjustment required to give the 70-percent reading is the calibration number for that tube

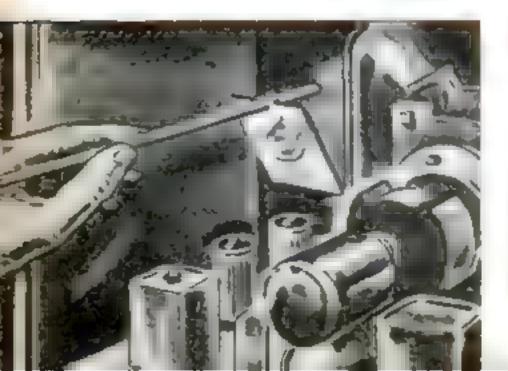


1 SET UP CHECKER, Procedure, shown for 6CB6 peniode, is same for nearly all tubes. Tube manual gives value of filament voltage for step 2, has chart showing which number test lead goes to which part of tube for step 3.

2 ADJUST FOR LINE VOLTAGE. With patching plug in AMP socket (regardless of tube type), turn tester on and set shunt control to 11 (for any tube). Press line-test button, adjust line control to center needle.

CALIBRATION TABLE PATCHING PIN CONNECTIONS PIN CONNECTIONS Tust TYPE OR TYPE OR TUBE (TO J2) PLUS G1 G2 G3 P SET & (Step 11) '6 (Step 11) SECTION RECTION TAP TAP #10P€+ 4-3001d SATO entiffer. 143 67 1R3 AMP 4AUS AMP Otto lafet been power 6.3 mentode AAUG AMP pentede 6.3 been sewer 北京中 AMP 154 1.6 AAVS pentude 4.3 155 AMP BAXS rectifier RECT pentade 0 Optdiede Link AMP 144 4844 pentade poutado AMP lus pontodo AMP BRCS ponfode 3 AMP 4-100 C 6866 oscillator dinde 122 PIDOE-Eenterffar. poutado AMP GGFS. MILE 304 Pentude pontudo AMP 48G6 6.3 ARM 354 pentade pour baket. AMP AMP ARMA 3V4 pantoda pentude 6.3 **\$U4** RECT 6836 peate de AMP ractifier. SEKS. AND pentede cernfige RECT AMP SYX 4817 triods. AMP AMP STHE A REAL (Innited fe sada AMP **64C7** pentode quadrytory 0.3 AMP AAGS pantade AMP 6 RQ6 AMP 4807 8467 puntade triede AMP AMP 4814 fille-de SANS pentuda 4 GHYS merifier RECT O DDEdiode #ALS 61127 1 AMP MAQ5 gentada AMP AMP AMP BASS postede triade SATE 6.3 AMP 6086 patroda. 6.3 3 4 AMP BIQDE-9039 beam pewor 6.3 2 7 AMP al- union

Use externor sumper to plate sup-



oferen muter should switch in best 12

Mirror on End of Stick Checks Filaments of Tubes Inside Set

When you're checking the filaments of TV tubes, a small pocket mirror on a handle will let you see down into the tops of shielded tubes in far-off corners without taking the chassis out of the cabinet. Be sure to use a wood dowel or other nonconducting handle.—Lance Werner, Cleveland.

224 POPULAR SCIENCE



3 TEST FOR SHORTS. Plug the short-test leads into adjacent jacks of J1 to check continuity between those two elements. Jump one lead around the other to test other elements. Steady glow of neon lamp indicates short.

4 CHECK TUBE QUALITY. Make sure patching plug is in right socket (60 B6 is an amplifier) and insert jumper plug P1 into socket J1. Set shout to calibration number for tube type. Meter reading above mid-scale is good.

CALIBRATION TABLE

eHe I	TYPE OR SECTION	FILE					Daniel had	PATCHING	Witness Co.	THE PART AND	0.00			Children and a	CART	PATCHING
		TAP	F	F	(10)2) K 61 67 63		SHUM3	#2.006 	THRE	TYPE OR SECTION	FIL.	F	F	(10 12) K G1 G7 G3		F (Step 11)
615	denda a	4.3	2	7	4	3	9	B100€-}-	676	dende -	6.3	4	5	7		DIODE
	fettide	6.3	1	7	4 5	3	26	AMP	404	rectifior	63	7	4	1 :	14	RECT
636	trisely	6.3	1	4	7 5	2	18	AMP	6 V 6	been ganer	6.3	2	7	6 5 4 - 3	1.0	AMP
	at .	ph	-	-	* 4	1	16	-	4W4	errefier.	4.3	Ţ	#	1	5 7	RECT
616	postude	6.3	2	2	4 5 4 -	3	22	AMP	496	beam pewer	6.3		7	B 5 4 - 3	1 14	AMP
ALA	heart power	6.3	2	7	8 5 4 -	3	29	AMP	624	enetifige.	6.3	3	4	1	. 10	RECT
	triada	4.3	4	5	2 4	9	18	AMP				-	-		10	-
856	treads.	0.3	7	0	2 *	à.		AMP	485	restellar	4.3	2	7	8	6	RECT
	al corpio	4	pla	-	3	1		01006-3-			-	-	-	*	5 6	44
	-	- 48	ph	-	1	4		2.4	AXA '	been jour	5.3	2	7	8 5 4 - 3	1 15	AMP
	-	07	p	o.		1		-4	778	triade	0.3	2	7	5 6 1	17	AMP
65A7	notalitates.	6.3	2	2	4 3	4	1.7	AMP		=	-	-	-	413	1. 17	M.
	publish	PI		=	7 8 4 5	3	26	-	7112	trande	6.3	1	0	7 5 1	72	AMP
	Irrade.	6.3	7	В	4 4	3	50	AMP		-			-	2 4 3	27	-
	40	+	20	-	* 3	2	50	-	222	t/rede	6.3	1	Ů.	4 - 3 3	55	AMP
43G?	gentade	6.3	2	7	3 4 6 -	4	12	AMP		deady		=		*	1	DIODE
45917	pentude	6.3	2	7	3 4 5 -	8	17	AMP				- 61	40	7	1	" -}-
	gentede	6.3	2	7	5 0 0 3	8	20	AMP	17277	pentede	12.6	4	\$	1 2 8 3 3	14	AMP
	pentoda	6.1	1	7	5 4 6 3	4	29	AMP	231.6	beam pewer	25	2	7	0 5 4 - 3	1 16	AMP
	trenda	6.3	1		3 1	2	44	AMP	2526	restation	25	2	7	4 3	14	WECT
		4	40	•	4.4	5	44			-		40	ø.	1	14	47
45N2	lutoda .	6.3	7	ě.	3 1	8	28	AMP	3518	heam power	15	2	7	8 5 4 3	F 16	AMP
	40*	W	Pi-	PP	1.1	5	28	-	3594	reclefter	35	3	4	7	F 8	RECT
4507	Irtodu	6.3	7		2 2	6	50	AMP	3525	rectifier	35	2	7	# :	1	#ECT
	dia de	*		-		5	8	010000-0-	5065	pentade	50	3	4	2 7 6	17	AMP
	-		H ^b	pt		4		- 4-	5003	genteds	50	3	4	1 2 6 - 3	12	AMP
678	terodu	4.3	4	5	7 1	9	44	AMP	50.0	beam paner	50	2	7	6 3 4 - 3	14	AMP
	drede	-		ø.	1	4	9	@100E->-	11773	enatifier	117	1	4	b	7	RECT

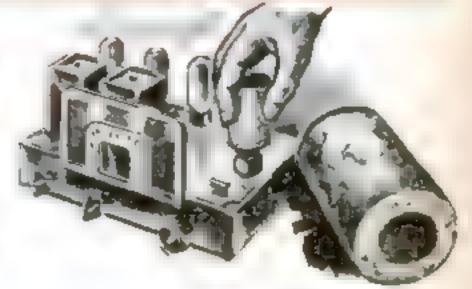
elePross meter shant malici in lest 13

Use external symper to plate cap

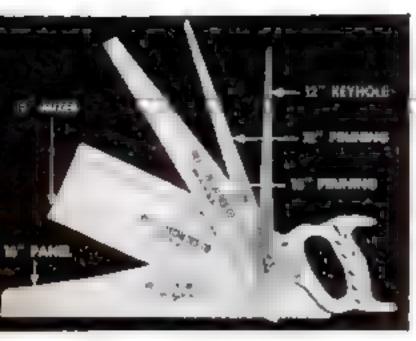
Wille parpenpl comper to gred auf

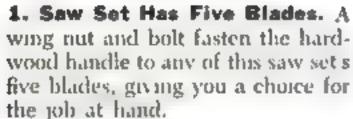
Hot Tubes Pulled Comfortably by Car-Radio Vibrator Lining

You can get an easy grip on hot or tight radio tubes with a rubber puller like this one. It is simply the sponge-mobile house from an old auto-radio vibrator. You can probably find one easily in the junk box of a radio-repair shop.—Hugh Lineback, Stillmater, Okla



X New Tools







2. Rubber Olican Gets Last Drop. To avoid squirts and dribbles, the Flexoil oiler has a synthetic-rubber bellows for sides. Pressing the base gives a steady stream—even with oil as thick as SAE 90—down to the last drop. Spouts are interchangeable.



3. Screwdriver Grips
Screws. Spring "fingers" on this small screwdriver hold tiny screws where hands can't reach. The lot includes swivel-top handle, locking chuck and two interchangeable screwdriver blades, one 12" and the other 24" long.



4. Drawknife Works Like Plane. A cross between a plane and a drawknife, this new tool will do small, hard-to-get-at jobs where a conventional plane can't go.





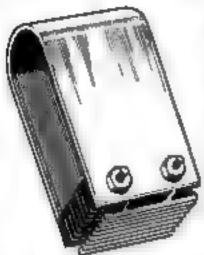




5. Miter Box Serves as Clamp. Besides holding wood for accurate 90° and 45° cuts, the Corner-mite will also clamp pieces for assembling miter or butt joints. The large part makes a try square. The slotted corner guide can be reversed (1) and the assembly used to clamp a small frame in one operation Slots make two-way adjustment possible. Because of this, wide and narrow wood can be clamped together (2). With squared ends butted against one side (3), identically spaced holes can be drilled in several pieces.

Further information on these products can be obtained from: 1. Weill Specialty Co., 1650 E. 38th St., Brooklyn 34; 2. Tomer Co., 4246 Abbott 4vv. 5., Manageding 3. Moody Machine Products Co., Culver & Willard Ave., Providence, R.I.; 4. Hunter Tool Co., Fhirtee, Calif., J. M kin Products, Inc., 568 Union Ave., Brooklyn 11

Razor Blades Serve as Scraper



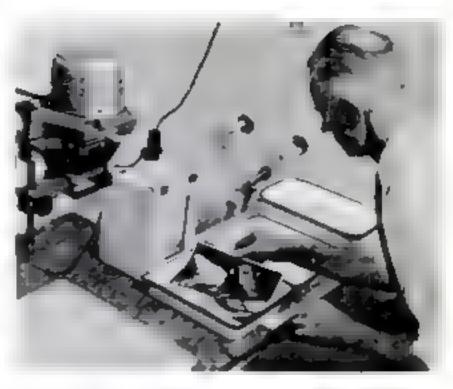
A STACK of old razor blades separated by cardboard spacers and held in a U-shaped metal strap will make a good scraper. It can be used on copper or aluminum and plastics as well as wood.—Ken Olm, Marquette, Mich.

Timer Turns Off Soldering Iron

If you forget to turn off a soldering iron, a burned tip or a fire may result. I plug my iron into an electric timer. If the timer cuts it before I'm through, I just turn it on again; if I forget it completely, the timer backstops me.—Melvin Leaf, Walker, Minn.

Magnet Cleans Deep Holes

It is often tough to remove chips from vertical blind holes in big iron castings. I use a chip-fishing tool made by magnetizing a round file from which the teeth have been ground. It is a handy "picker-upper" too.— C. W. Close, Sycamore, Ohio.



Bathtub Doubles as Darkroom

A shear of %" plywood will make your bathtub a handy and quickly assembled bench for photo finishing. Cleats on the underside rest against the inside rim of the tub to keep the plywood from slipping. One corner is cut away so that prints can be slipped from the fixing bath into wash water in the tub. For safety, complete all electrical connections before switching on the current and turn the current off before disassembling the hookup each time you use it.—O. A. Nelson. Seattle.



in NOVEMBER

arms. Watch any time, not only in November. Not long ago an ROTC instructor finished a lecture on safety with firearms, then shot himself in the arm.

YEAR after year, a large proportion of accidental deaths between the ages of 15 and 24 is caused by firearms. These accidents usually occur as someone prepares to clean a gun, or drops it, or leans it against a fence, or jars it in a car. Never look into the muzzle to examine a barrel, look into the breech end. Never play with firearms. When you carry a loaded gun, keep it on "safety." Before climbing a fence, break the gun or open the breech and put it over fence first. In the home, where half of all firearms accidents occur, weapons should be kept locked up—and unloaded.

THE WORLD'S FIRST REALLY

QUIE

OUTBOARD MOTOR



Entirely New!

Entirely Different!

51/2 Horsepower! No Vibration

Revolutionary Quiet!

Full Gear Shift! FORWARD NEUTRAL

Mile-Master Fuel System!

Up-and-Off Motor Hood!

Twist-Grip Speed Control!

A Beauty to Look at ...

And a Dream to Drive!



SEA-HORSE 51/2

This—you've got to try yourself the new Sea-Horse 5 1/2! There has never been anything like it!

It's quiet! So quiet that conversation now becomes a part of outboard boating. So quiet that it means the eventual revolution of all outboard manufacture. Motors that deafen are doomed!

And such silk-hat quality! Vibration is gone. No more transom chatter, No more plank-sting. Even the steering handle rests in your hand as still as a tiller.

Best of all, it's miraculously trained down to the size that most outboard users prefer. Same popular handling case as its famous predecessor, the Sea-Horse 5—but even sweeter power—and more of it!

See your Johnson Dealer, Look for his name under "Outboard Motors" in your classified phone book,

FREE! Write for the new Sea-Horse literature that describes the greatest line of motors Johnson has ever built.

JOHNSON MOTORS 500 Pershing Rd., Wavkegen, III,

In Canada: Mfd by Johnson Motors,

THE NEW 1984 SEA-HORSES

SEA-HORSE 5%.—54 hp. Johnson's new Suspension Drive Seastion. Only.....\$210.00°

SEA-HORSE 10—10 hp. New. Improved More brilliant than ever.......\$297.50°

SEA-HORSE 25—25 hp. Only 99 lbs. Over 30 mph. It trolle! Everything deluxe...\$410.00°

SEA-HORSE 3—3 hp. 32 lh. twin. Rugged. With smaxing Angle-matic Drive...\$145.00°

SHIP-MASTER REMOTE CONTROL—Shift-and-limitle. Corrosson-proof Instant hook-up on Sea-Horse 10 and Sea-Horse 25.....\$29.50°



*Prices f.o.b. factory, subject to change, OBC certified brake hp at 4000 rpm, Weights are approximate,





Johnson's revolutionary new outboard construction that isolated your boat from engine vibration, No jitter, chatter, throb, or noise.

Johnson Sea-Horses for DEPENDABILITY

Quit Skidding! **Build a Sander**

Grit poured under the rear wheels will give you traction when you need it most. This writer equipped his car for \$5.

By E. F. Lindsley

A LIGHT snow had given the streets the A glassy surface that pays off in work for the body shops. When the stop light showed green, my tires slipped and screeched and I got going up the grade only with difficulty. The driver in the lane beside me pulled away surely and smoothly. Stretching my neck at the next light, I finally spotted his secret-the nozzle of a wheel sander like the ones locomotives and big trucks have had for years.

That experience was enough. I decided I wanted wheel sanders, too, It came as a jolt, however, to learn how much they coststrictly de luxe on my budget. So I set out

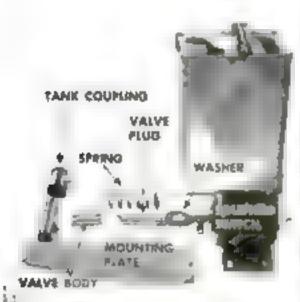
to get them for less.

I did. A five-buck bill easily covered the cost of the ones I built and installed myself. Less will do it for you if you have a wellstocked junk hox.

What will they do? Sanders are no substitute for careful driving. Neither do they outmode chains. In deep snow, chains are the only answer. Sanders are most useful on glare (ce and hard-packed snow-or when you need to get out of a steep driveway.

They can shorten stopping distance as much as 30 percent when used in conjunction with the usual pedal-pumping action recommended for braking on ice. At a dead stop, they won't help you start unless you can roll far enough to get your tires onto the sanded area. However, if you get jammed up against the curb and can't pull away, it's not too hard to dump a handful of sand and then get out and kick it under the tire.

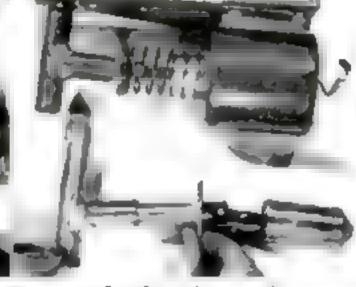
The big payoff is the almost instantaneous



THE MAKINGS of one rander FILE RIGHT-ANGLE PART of valve FILE END of valve plug to fit include a solenoid switch with a clevia (once linked to a starter pinion), parts of valve drill a series of small holes spring seat. Assemble with body cut from electrical conduit, and a piece of 🐝 " shafting for the plug. Sharp 45° grit without januming.



body to fit main piece and solenoid elevis, join with a solder or braze together. Then rivet. Solder on washer as around side as shown, knock sloping face of valve plug out the waste, and clean up down. If spring is too stiff end of this cuts off flow of er so that the valve plug can turn. Mounting-plute edges enter freely.



edge with file or hand grind- for solenoid pull, trim off a are bent up, corners soldered.

200 POPULAR SCIENCE



response of a car starting to broadside. Provided your speed is at all reasonable, sanders will promptly get the back end around where it belongs. Then there's the brake-loaded slide into a car stopped ahead of you. Sanders will save you a bump, embarrassment and perhaps a repair bill.

But it isn't sand. Sanders don't use sand at all, but a very coarse grit made from slag or what have you. Ordinary sand won't

work; it packs, lumps, absorbs moisture and freezes. Its small grains jam the valve solid. Don't even try it. Go to an accessory store catering to truckers and buy the proper grit.

Just how and where you mount your sanders will depend on the shape of your car trunk. If it calls for a pair of small tanks as mine did, make them easily removable for filing. If you can find room for big metal hoppers, their extra weight will require

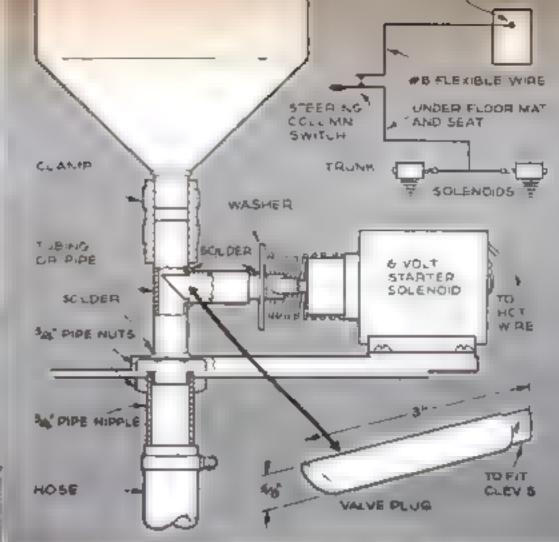


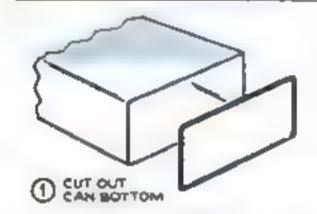
HOSE IS CLAMPED on pipe nupple held in hole in trunk floor with pipe nuts above and below (left). Hopper and valve unit slip into

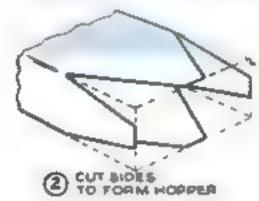
pipe nipple a short way (right) but can be removed for refilling. This rig snaps into place under deck, but could be held by spring.

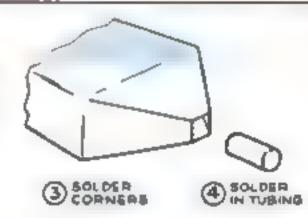


cut can to make hopper, and solder in tubing. Unit above is reads for trial. Solenoid action should be snappy, spring strong enough to push plug back reliably when current is cut.









secure mounting, possibly with strips of inner tube. Big tanks won't need filling so often, but after the novelty wears off you won't use grit as rapidly as you'd think.

The valve control. Although a cable-operated valve would work, quick response is so vital that you haven't time to tug on cable pulls. I bought two old Buick starter solenoids for a buck each, stripped away the relay parts from the back of both, and hooked the hot wire from the control switch to the one terminal with the big connector eye. The ends of the other two wires are screwed down against the housing.

In picking your solenoid switches, get the kind with a clevis, which simplifies the valve hookup. You may prefer to leave on and use the solenoid relay, because your control switch will then have to handle only a small current.

Prowling around the wrecking yards, I bought a flip-type directional-signal switch. Not needing the stuff that flips it back after you turn a corner, I stripped the unit to the switch and indicator light. Since the two

sanders work together, only one pole of the switch is hooked up.

Firing is simple. Hook up to a hot terminal somewhere, run the wire to the switch, down the steering column and under the floor mat to the trunk, and branch a line to each solenoid. The car frame provides the return side of the circuit, so be sure both solenoids are securely grounded.

SANDING GRIT must drop just in front of wheels, but hoses must not touch tires. Because bumper jack shifts body out of alignment, it was used only to put another jack under axle. Hoses should be straight; bends or sags trap sand.





Movies indoors or out

For Indoor movies just attach Kodak's Photo-Light Bor Conly \$8.75; lamps, \$2.70 for two) . . . set and shoot. That's all there is to it!

Color movies, too

30-to-40-scene Kodachrome Film costs but \$3.95 a roll (8mm) --Including processing! (Only \$3.25 for black-and-white.





Exposure guide "delivers the goods"

Built-in exposure guide takes out all the figuring. leaves only the fun . . . makes sure exposure's right every Ilmel

Most exciting family gift of all

... a Kodak Movie Camera

CINE-KODAK RELIANT CAMERA

Moderately priced, but it has lots of advanced features . . . makes slowmotion movies, accepts telephoto lens. Uses economical 8mm. roll film for movies with snapshot ease, at snapshot cost. With f/2 7 lens, \$89.50. With f/1.9 lens, \$110. See the "Reliant" of your Kodak dealer's.



"It's Kodaks budget special

Brownie Movie Camera





Cine-Kodak Magazine & Camera

"Here's versatility plus"

*Men sure go

for this one!"

Most aconomical way to crisp, clear movies In full color or black-and white. Uses 8mm. roll film. Features easy, no thread loading, built-in exposure guide. With fine, fast 1/2.7 lens, \$39.75, With super-speed I/I 9 lens, \$49.50.

Loads in 3 seconds with magazines of 8mm. Flm. Accepts telephoto lenses, has many luxury features. With f. 19 lens, \$160 For really BiG movies, ask to see the "Royal," Kadat's finest personal Iomm, movie

camera. With superb "Ektor" f, 1.9 Lens, \$176.25.

Prices include Federal Tax where applicable and are subject to change without natice.



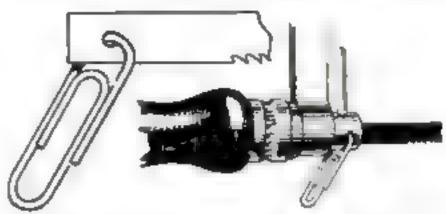
Clothes Hanger Clamps Wood

An ontinant clip-type pants hanger can be pressed into emergency use as a clamp to hold small wood parts together while they are being glued. The felt strips found on most of these hangers automatically pad the jaws and prevent marring.—Ted Otsu, Vancouver, B.C.

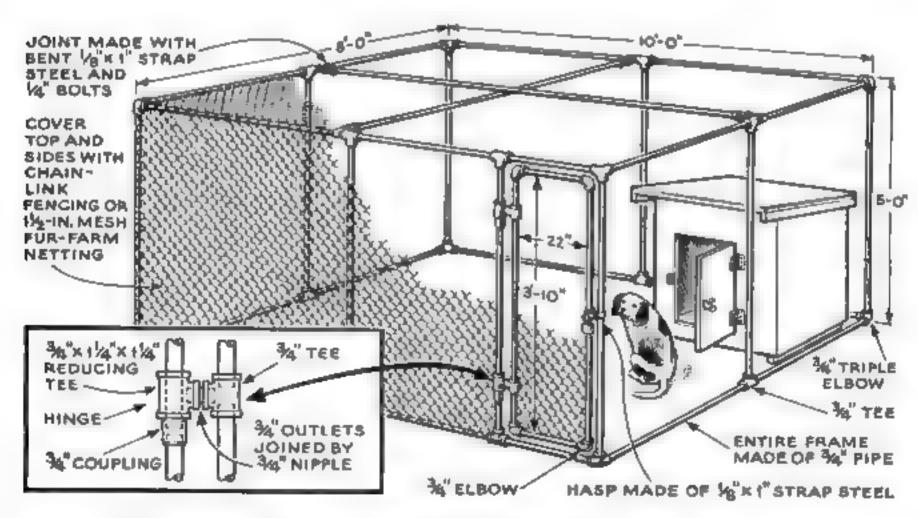
Lighter Wheel Made on Lathe

A WHEEL for a nonautomatic cigarette lighter can be made by turning drill rod to the wheel diameter, then cutting a 36-to-40-t.p.i. right-hand thread about half the usual depth. Run the lathe slowly in back gear and roll a mill file over the threaded surface to bring up burrs. Drill the hole, cut off the wheel and harden.

Jigsaw Blades Changed Quickly



A PAPER clip inserted in the end of a jigsaw blade after the pin has been knocked out provides a handle to help speed blade changing. The clips also make convenient hooks for hanging up various types of blades for quick selection.—Ken Olin, Marquette, Mich.



Fence Wire Over Frame Built of Pipe Lets Dog Run

I WANTED to keep my dog from running loose, but I didn't want to lock him in the house or tie him up. By using ordinary fence wire and some scrap pipe and fittings, I built this kennel. It keeps the dog safe while

still giving him plenty of room to run and play. The pipe was bought at junk yards, cut to length, then threaded by a plumber for a few dollars.—James A. Shiminski, Worcester, Mass



mal 20"JIG SAW

Think of it—this rugged 20-inch jig saw has its own built-in motor! Not a solenoid or a vibrator, but a full-rotating armature, powerful AC motor.

A rugged, professional power tool that cuts up to 21/2" stock with ease, this newest of all power tools makes precision woodworking actually easy. Shopmaster's EXCLUSIVE COMBINATION MITRE GAUGE AND RIP FENCE accessory sees to that!

Want to rip? Just turn saw head 90°. It's that simple. Truly the most outstanding QUALITY power tool value on the market today!



Exclusive combination mitte gouge and rip fence ovadable at (Lucy prixe tripile

Motor included Slightly higher in zone 2

OTHER FAMOUS SHOPMASTER &

10012



FAMOUS UNIVERSAL

COMBINATION TOOL

WRITE FOR FREE CATALOG

There's a Shapmaster power tool for every Write teday for estalog of complete line.

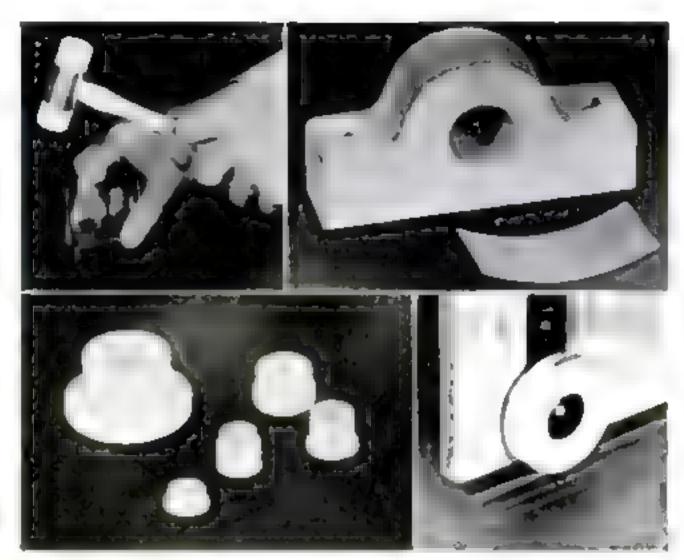
SHOPMASTER, INC. Room LTE 1214 South 3rd St. # Mignospolity Minn.



NEW Shop Ideas

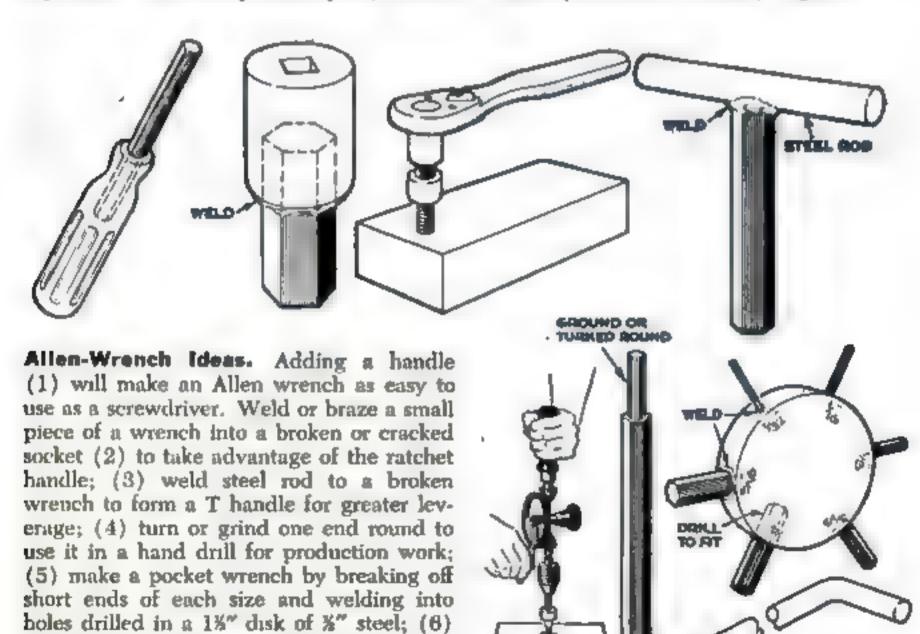
Shop Uses for Nylon. Available in various stock sizes as rod, sheet and tube, nylon is easily machined and can be used to good advantage in your shop. It will soften when heated, yet under certain conditions it is actually taugher then metal

Here are some shop suggestions: (1) Impact hammer made of rod stock does not man the work; (2) pillow-block bearing nade of wood is lined with nylon sheet—requires no oil; (3) sleeve bearings or bushings turned from rod provide quiet, oil-free



operation in light machinery; (4) rollers for cabinets or doors are quiet, long-lasting.

Nylon washers are excellent for eliminating end play in electric motors as they have a low friction coefficient and are not distorted by oil.—Will Thomas, Buffalo.



Cafferty, Fort Bluss, Tex.

weld on a long, L-shaped handle for reaching into the dark corners.—Pot. P. E. Mc-

How to fix up your bathroom with Armstrong's M-67 Monowall



Large, colorful panels of M-67 Monowall® can help turn an old-fashioned bothroom into a bright, easyto-clean room in less than two days. Begin by marking a level guide line around the walls.



Then you cut Monowall to fit all wall surfaces. Handy-sized sheets of Monowall cut like wood but will not crack, thip, or peel. Decorative metal channels are used for corners and joints.



Spread Armstrong's Panelboard Coment on the back of the Monowall and apply a sealer cost to the walls. Then press Monowall into place, using metal channels to join panels.

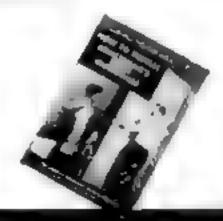


4. You'll be proud of the results. Monowall's M-67 plastic finish resists all kinds of stains and hard wear, is a such to wipe clean. Your wife will want Monowall in the kitchen next.

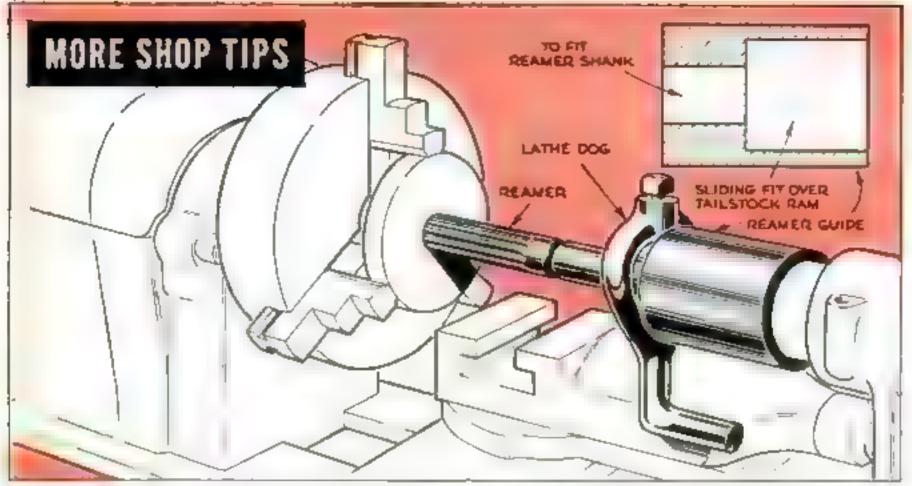
M-67 Monowall's ten beautiful colors and three smart styles will suggest plenty of handsome decorating schemes for your bathroom, kitchen, or laundry. Far full details, see your local building materials dealer.

FOR FREE BOOKLET: "How to Install Armstrong's M-47 Mono-wall," write Armstrong Cork Company, 4111 Washington Avenue, Lancaster, Pennsylvania.

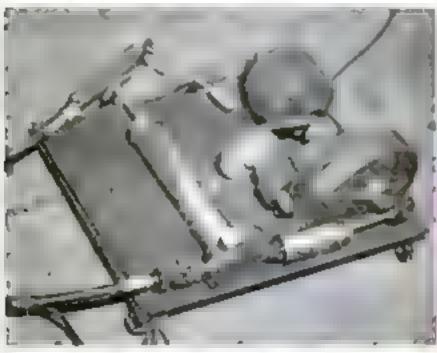




ARMSTRONG'S M-67 MONOWALL



Createst reaming accuracy is obtained if the reamer is allowed to float in the tail-stock. The reamer can be held loosely in the clauck, but the jaws seldom center themselves until turned down tightly on the work. This simple reamer guide allows the reamer to float, yet keeps it on center. The guide fits over the tailstock ram and the reamer is inserted in the hote bored in its



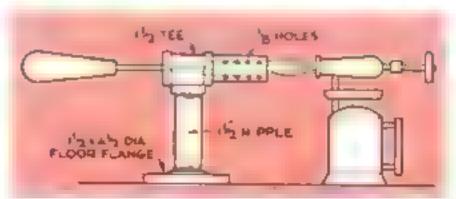
Grease Gun 's Power-Operated. A necessity in the small, busy repair shop is this power-operated greasing outfit. A %" rum is stroked 2" through the grease chamber by a 1" eccentric mounted on the shaft of a gear-reduction unit. A stock grease-gun larrel mounted on the grease chamber serves as a reservoir. High-pressure hose and an insulated, heavy-duty wire run side by side to the gun. A toggle switch on the handle sets the motor in operation.—M. R. Rice, Cranford, N. J.

center. A lathe dog holds the reamer against rotation.-Joseph Tracy, NYC.

Hang That Chuck Key. That chusive drill-press chuck key will always be at hand if it is hung on a hook bent from heavy wire. The hook can be held by one of the cap screws that hold the belt guard in place.—

Gordon D. Carlson, Minneapolis.

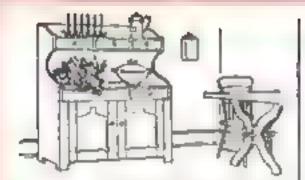




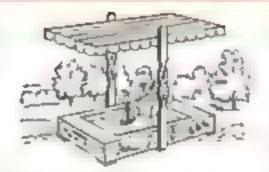
Furnace for Soldering Iron. Fired by a blowtorch, this furnace gets a soldering iron hot quickly even outdoors. Although portable, it is also useful on the bench.

A li" pipe tee is screwed to a pipe nipple that brings it to blowtorch height. A second pipe nipple screwed into the tee has it air holes drilled along it as shown above. The base is a standard floor flange. In use, the blowtorch flame is aimed directly into the furnace barrel.—Lewis Booker. Louisville.

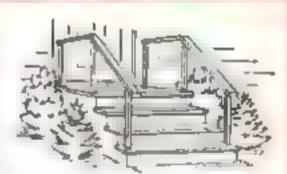




MOM wants beoutiful new furniture to dress up her home!



JUNIOR AND SIS wont juvenile furniture that spells play fun!



DAD wants to enjoy doing his own money-saving home repairs?

5 Woodworking Exclusives...

yours with AMF De Walt[®] "Power Shop"

- 1. 12 POWER TOOLS IN I—all run on one direct-drive motor!
- 3-DIMENSION FLEXIBILITY—makes it simplest and safest to learn—ensiest to operate!
- 3. SAWS THE EXPERTS' WAY—blade moves, material doesn't. You see what you do—no guesswork!
- 4. PROFESSIONAL PRECISION—home workshop version of same machine preferred by experts for over 30 years!
- 5. COMPLETE HOME WORKSHOP—does everything in woodworking—makes every cut and joint!

Save 20% on fine furniture, home improvements and maintenenses Send for free booklet today!

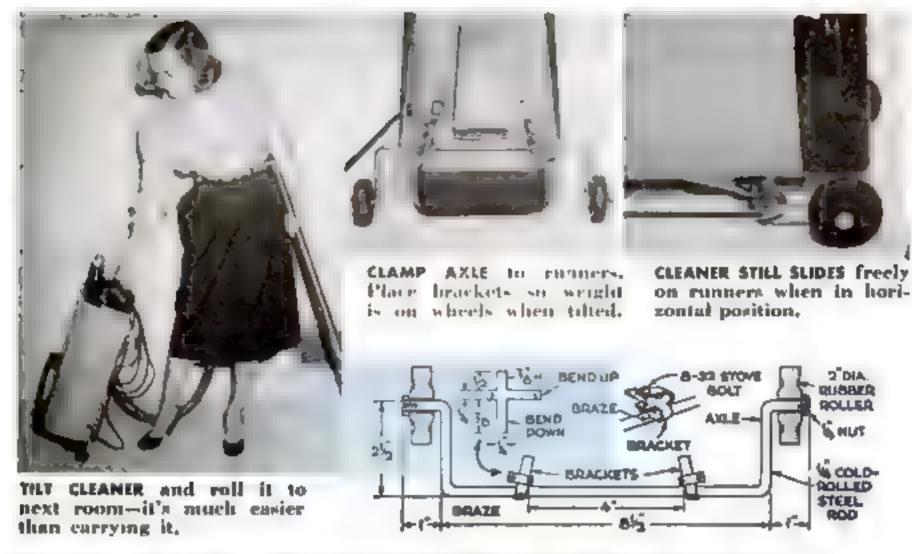


IN CANADA: De Wolf Conado Limited, Guelph, Onlaria

AMF DeWalt "Power Shop"

AR	IF DE WALT, Dopt. PS-II-53, Luncustur, Pu.
	Please and me free, fully litustrated woodworking beeklet showing the many ways the AMF De Wall "Pewer Shep" will save as manny.
	Send me the name and address of my negrest AMI De Wall dealer.
Ne	-+
Ne Adi	free

Tune in OMNISUS Sunday afternoons for America's most unusual TV entertainment. See local paper for time and channel,

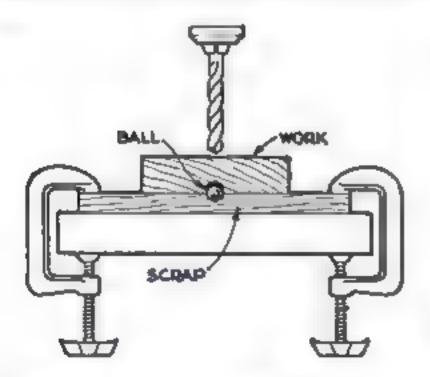


Vacuum Cleaner Mounted on Wheels Rolls to Its Work

If a vacuum cleaner is the tank type, a pair of wheels will lighten the housewife's work. The cleaner then can be rolled from room to room.

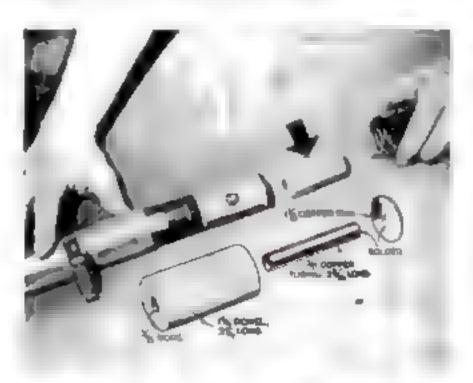
Use 4" mild or cold-rolled steel rod for the axle. This can be shaped by clamping it in a vise and bending with a hammer to the dimensions shown. Use wheels with swivel rollers.

Cut two brackets from 1/16" mild steel to attach the axle to the cleaner. Braze the brackets to the axle 4" apart. Clamp the brackets around the tank runners with 8-32 stove bolts.—John Rogers, Dollas.



Preventing Splintered Holes

A BEARING ball and a scrap of wood will guarantee splinterless holes in wood. Clamp the scrap to the drill-press table and drill half as deep as the drill diameter. Next drill halfway through the work, Remove it, put a tight-fitting ball in the scrap hole, invert the work and replace with the ball in the starter hole.



Dummy Cell Converts Flash Gun

Conventing a three-cell flash gun to the capacitor type leaves extra space because the capacitors are only two cells long. A short dowel with a metal core fills the space and provides an electrical contact. The dummy also helps when you have only two live cells for a conventional three-cell flash gun.—Evan Wright, Topeka, Kan

Are You Gambling \$500* on Your Anti-Freeze?



Yes, new improved
U.S.I. PERMANENT is the world's
safest anti-freeze — and here's why!

1 U.S.I. PERMANENT contains more ethylene givcol — acknowledged the world's best anti-freeze agent. Protects against freeze-ups even in coldest weather!

2 U.S.I. PERMANENT'S Special Inhibitors, a top trade secret, protect all 7 metals in a car's cooling system; stop rust, corrosion, foaming, and clogging.

3 U.S.I. PERMANENT gives uninterrupted protection from Fall till Spring on one filling, because it won't evaporate, even in the bottest weather.

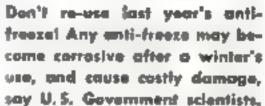
That's why the U.S.A. goes for U.S.I.! It's weatherproof, worry-free, and guaranteed!

— Get U.S.I. right after Labor Day.

NEW, IMPROVED U.S.I. PERMANENT ANTI-FREEZE



of replacing engine and cooling system ruined by corrosion, in 10 leading makes of cars.

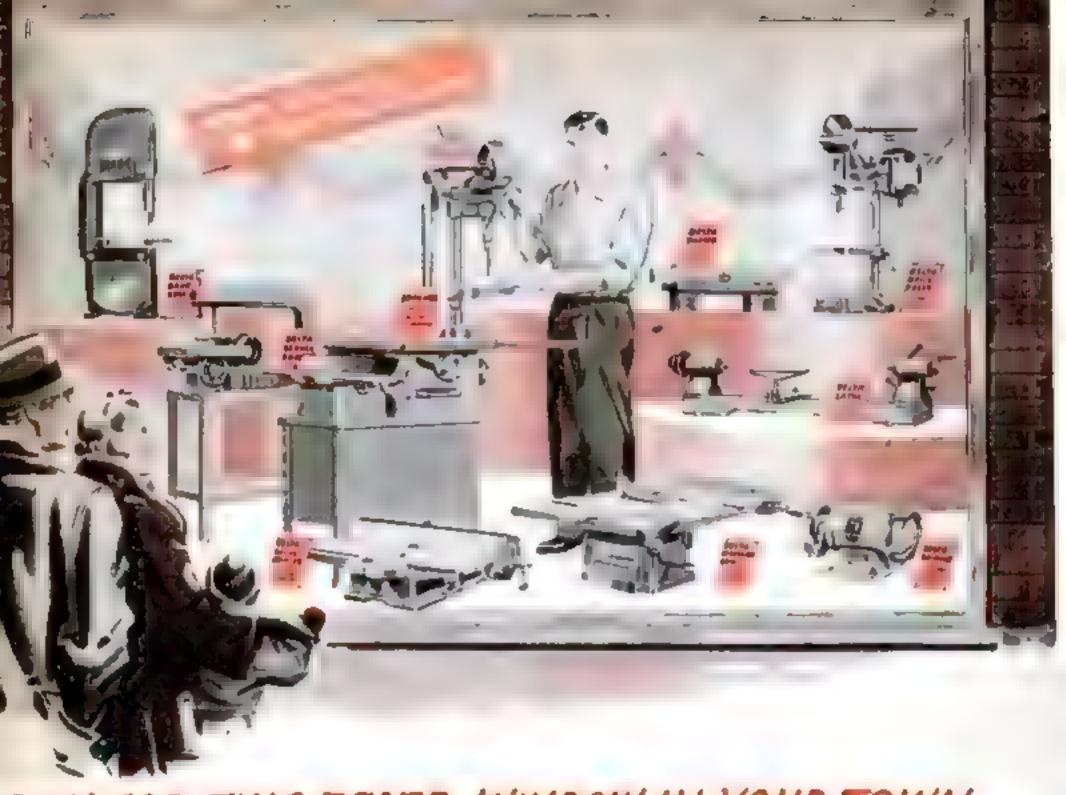


(Noticeal Bureau of Standards Circular 506)





making finer anti-freezes since 1907 - U.S. INDUSTRIAL CHEMICALS COMPANY, Division of National Distillers Products Corp.

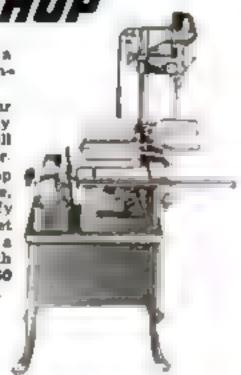


OOK FOR THIS DELTA WINDOW IN YOUR TOWN

DELTA SHOP

Four most basic Delta Homecraft Tools in a compact one-motor unit: • big capacity 8' circular

any with tilting blade, hunky
4" jointer; standard 11" drill
press; versatile due sander.
Does 86% of all home-shop
operations. Keep it anywhere,
use it anywhere. All tools ready
—no adjustment nuisance. Get
it all at once or one tool at a
time. Price, complete with
stand—less motor . . . \$229.50
—a loss price for Delta quality.



2 BAND SAW

Ideal for curve cuts, inside and out; and for straight cutting of heavy stock. A natural No. 5 tool for the well equipped shop. Price . . . \$54.50 —e loss price for Delta quality.

3 SCROLL SAW

For cutting intricate petterns, fret-work; both innide and outside cuts. Youngsters love the scroll nawanfety features make it an
ideal "learning tool," Price
. \$43.50 — a low price for
Delta quality.



4 DE LUXE JOINTER

Hunky preclaiou jointer noted for safety Puts on a perfect "finish" edge with one easy pass. Planes surfaces up to 4" width, also does many extra jobs. Price . . . \$57.50 — a low price for Dalta and quality.



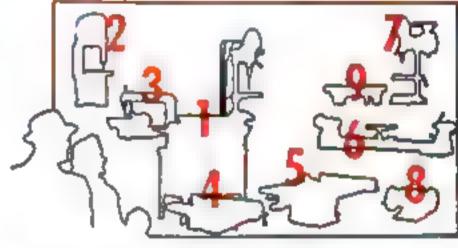
5 ECONOMY SAW

Circular saw with tilting table instead of tilting blade. Accurate saw for basic cutting at minimum cost. Price . . . \$44.50—a low price for Delta quality.



Pick Your Year-Around Gift from the DELTA POWER TOOL WINDOW

A whole lifetime of enjoyment is wrapped in every one of these famous Delta Homecraft Tools and how well you know it! Any one of them is a welcome gift-as fine tools as money can buy, yet priced for any budget. If you're a veteran shopman, here are tools to complete your equipment, a ecroll eaw, drill press, jointer, lathe, grinder or shaper. Or if you've just started, there's the DELTASHOP-a one-motor combination of the four basic, most-used Delta Homecraft Tools. All have this in commonthey quickly pay for themselves by cutting home maintenance and repair bills and giving you the satisfaction of "doing a job like a professional."



Most probably this very window will be shown by one or more of your local stores. It will pay you well to find it. Pick out the tools you'd like to own—then be sure to bring the family and give them your "Christmas hint" early.

to make their own designs, then turn them. No finer tool than this Delta Homeoraft 11" Lathe. Price . . \$44.50 - a low price for Delta quality.

9 SHAPER

Make cope and reversa mouldings sash, door and brick mouldings, bese moulds, ornemental odges; a wanted tool for post-grad shopmen. Price . . . \$69.50 - a low price for Delta



Delta dealers are listed under "Tools" or "Machinery" in the yellow pages of your phone book. You can also buy Delta Homecraft tools from leading department stores and IRHA hardware stores in your city, Delta Power Tool Division, Rockwell Manufacturing Company, 504 M. N. Lexington Avenue, Pittsburgh 8, Pa.

Prices slightly higher west of the Reckles

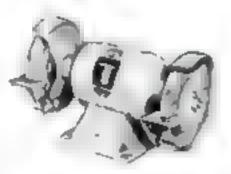
7 DRILL PRESS

every shop; the most-used tool--can be used to drill, route mortise carve, many more. With Delta accessories, its usefulness is almost unhmited. Price . . . \$54.50-a low price for Delta quality.



GRINDER

This carefully engineered bench grinder keeps cutting tools sharp and bright. Can also be used to clean and buff. A real time and money saver in the workshop. Price . . . \$39.95—a low price for Debts quality.



QUALITY POWER TOOLS

Another Product of

Rockwell



Plywood Back Rest Turns Bed into Sofa

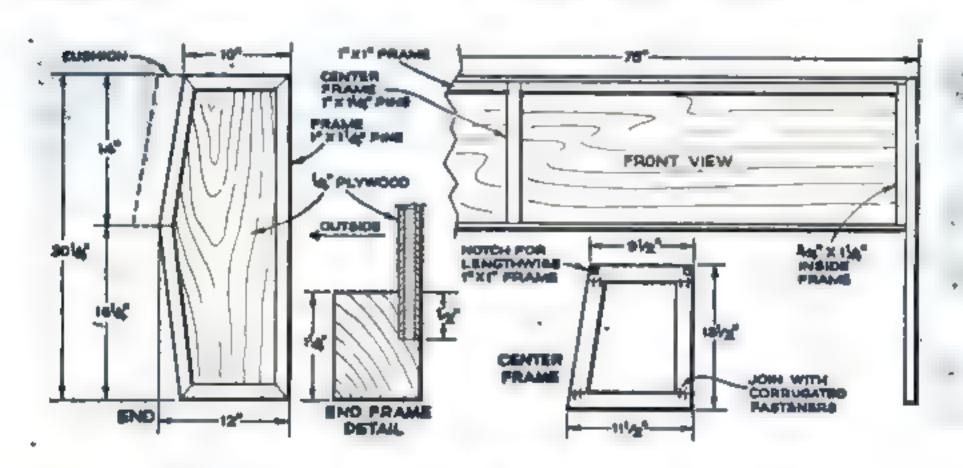
Easy to build, it makes it simple to turn a living room into a bedroom.

YOU can use this sofa bed 24 hours a day. The idea was borrowed from modern hotels that give patrons both a sofa and a bed in a small room. The unit consists only of a frameless bed and a plywood back rest that also stores bedding.

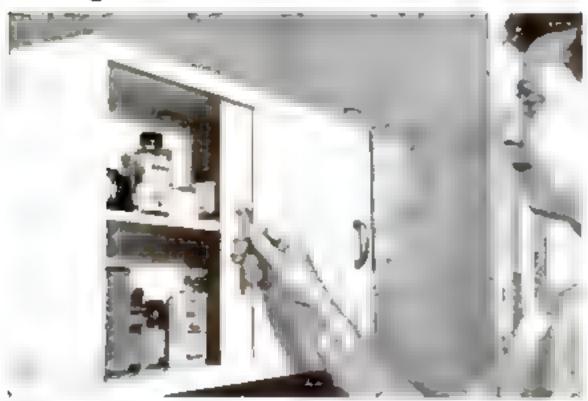
A child's room where play space is at a premium or a den that doubles as a guest room are ideal spots for the two-way units. A pair built around twin beds will convert a master bedroom into a pleasant daytime sitting room.

The back-rest dimensions are for a standard single bed about 16" high and 6' long. However, you can use a bed of any size. Just build the back rest about 1" longer and \mathbb{\mathbb{H}}" higher than the bed to allow it to slide under.

The framing is pine, 1" by 1%" for the ends and center frame, %" by 1%" for the two inside end frames and 1" by 1" for the longitudinal members at the two top corners. The back and front are butted against the bottom without lengthwise framing. Attach the plywood to the frame with glue and finishing nails. The end panels are rabbeted into the frame pieces.—John Rogers.



Sliding-Door Cabinet Increases Bathroom Storage Space

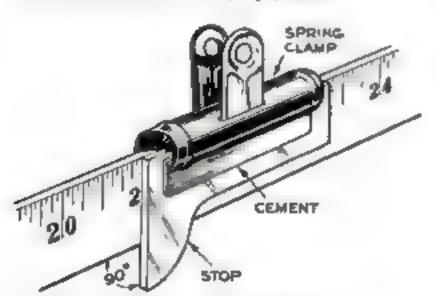


TEMPERED hardboard is used for the sliding doors of this medicine chest. Grooves can be made with a dado cutter or by running 1"-by-5" pine over a power-saw blade twice to make a wide kerf. Miter the corners of the pine box and join with glue and nails.

Insert the doors before assembling the cabinet. Rub soap or paraffin in the grooves to keep the doors sliding smoothly.—W. A. Van Sandt, Norfolk, Va.



TOP LIFTS UP to store bedding, is fastened on with three brase butt binges. Top, sides, bottom and ends are ½" plywood.



Pointer Marks Yardstick

A SLIDING stop on your yardstick will make measuring easier. Cut the pointer out of aluminum, plastic or thin plywood and clip it on with a spring-type paper clamp.

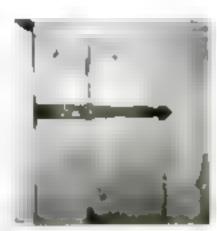
—Walter E. Burton, Akron, Ohio.

AT NIGHT, hed in pulled out like this. Back rest is padded with suitcloth cushious that are tacked on.

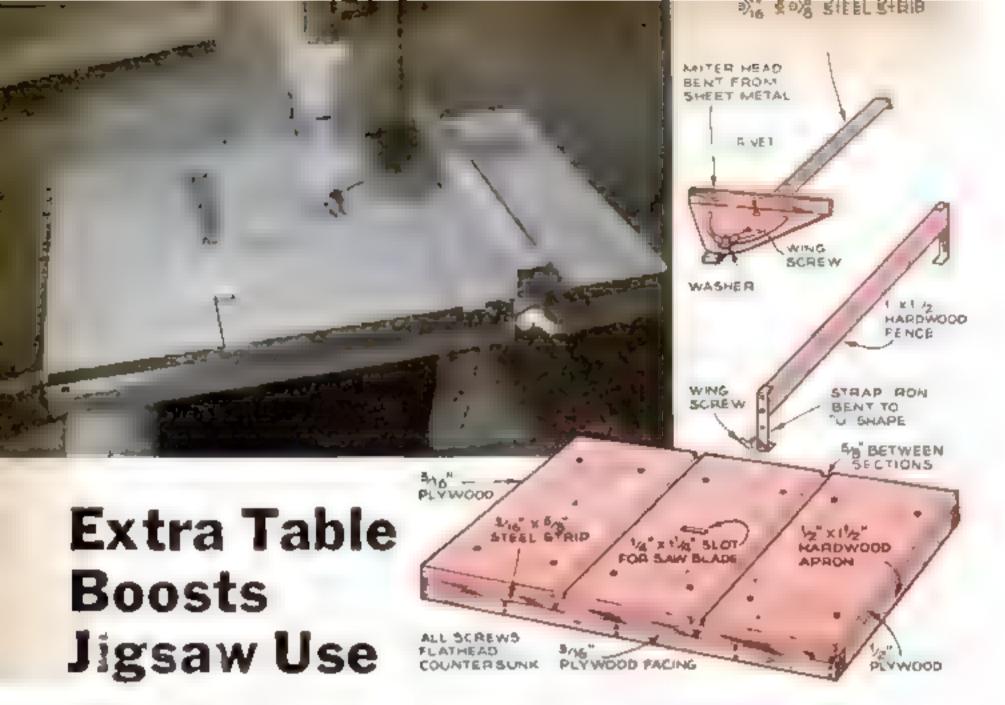
Dummy Hinges Look Real

You can make convincing copies of wrought-iron hanges by combining dunmy tangues with butt hinges. Cut tangues out of

heavy sheet alumimm, peen surface with ball hammer and fasten with roundhead screws. File facets on screwheads for handwrought look. Paint hinges black.—G. A. Devan, Missoula, Mont.







If YOU lack a circular saw, an auxiliary table fitted to a jigsaw will enable you to make straight-line, angle and bevel cuts.

Make grooves for the miter gauge by screwing three pieces of 3/16" plywood over a panel of %" plywood 20" long and 1" wider than the depth of the pigsaw table. Use a steel strip %" wide for setting the spacing between the three pieces. Use the same strip for the body of the miter gauge.

Screw a %"-by-1%" hardwood apron around the underside of table. Add two more crosswise strips underneath to fit snugly against the ends of the jigsaw table, and place two turn buttons on these to keep table from biting. The clongated saw-blade slot permits tilting table for bevel cuts.

Make the fence from 1"-by-15" hardwood

and two U-shaped ends bent from heavy strap iron to fit snugly under the front and back aprons. Drill and tap the front bracket for a %"-16 wing screw to lock the fence against a %"-by-3/16" steel strip set in the front apron. If you can't buy a screw of this type, make one by threading a wing nut on a machine screw and pinning or soldering it in place.

Bend the miter head from 3/32" sheet metal and cut a semicircular slot at about a 1" radius off the pivot hole. Fasten the head to the steel strip with a rivet, countersunk and filed flush on the underside. Drill and tap the strip in line with the slot if the head for a 2"-16 wing screw. Calibrate gauge for quick-setting to the most-used

angles.-Will Thomas, Buffalo.

Water Keeps Putty Pliable



When you have a blob of putty left over after a job, place it in a glass or other handy receptacle. Cover with water and the putty will stay plable for an undefinite period of time.—O. A. Nelson, Scattle.

246 POPULAR SCIENCE

Flash Extension Can't Slip

Your extension holder won't slip and droop with this extra spring to help tighten it. Out the feet off an old spring clamp, bend the ends to form hooks, and wedge the spring between the clamp arms.







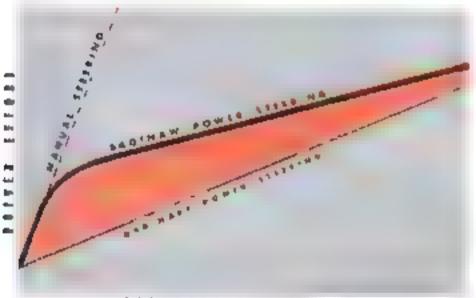
What every Automobile man

should know about

Power Steening

DOWER STEERING is attracting more attention in the automotive field, and winning more rapid public acceptance, than anything since automatic transmission. Saginaw Power Steering is now available on all General Motors cars and three other well-known makes. Already over half a million newcar owners are enjoying it—yet, as with any new product, there are still some misconceptions due to incomplete or faulty information. That's why we, as the world's largest producer of power and manual steering gears, are publishing this series of messages to help answer some of the questions most frequently asked about Power Steering.

4. WHY IS "FEEL OF THE ROAD" SO IMPOR-TANT TO POWER STEERING SAFETY? Without



FICEBLES REFLETANCE

This simplified graph shows the basic difference between Seginary Pawer Steering and ordinary types. The letter apply power at the slightest fouch of the wheel, funding to couse overcontrol. Seginary Pawer Steering goes into action only when more than "fingertip" pull is needed. This SAFETY ZONE is purposely provided to excure normal "feel of the read" and prevent everstooring.

this familiar "fee!" in the steering wheel, many drivers have a sense of insecurity and a tendency to oversteer. In other words, when power is applied continuously, steering is frequently too easy for safety. So we have deliberately designed Saginaw Power Steering to go to work only when you need it. Whenever more "fingertip" effort is needed to steer (as at high speeds on a smooth, straight highway) your car remains under conventional manual control. But, the moment more than "fingertip" effort is called for, Saginaw Power Steering instantly supplies the additional "muscle" -with just enough effort left to the driver to assure the normal "feel of the road"-as graphically shown in the chart, With Saginaw Power Steering there is never any sensation of "driving on ice." It never interferes with safe control of your car.

S. MUST DRIVERS BECOME ACCUSTOMED TO

POWER STEERING? Not Saginaw Power Steering! There's nothing new to learn because your wheel still has that ressouring "feel of the road" at all times. You cannot feel Saginaw Power Steering "cut in" or "cut out." The only difference you notice is the effortiese case of turning . . . the wonderful freedom from "wheel fight." After a turn, your car atraightens out exactly as with manual attering.

The simple, ingenious Saginaw design which accomplishes all this so dependably will be the subject of our next message.

MEANWHILE—If you'd like to learn more, we'll be delighted to send you "THE FACTS ABOUT POWER STEERING"—an interesting bookiet we've prepared to help give you a better understanding of this important new development. It's yours for the asking—just use the handy coupon.

Seginaw Steering Goar Division General Maters Corporation

Saginaw, Michigan



Please send a free copy of The Facts About Power Steering."

NAME

ADDRESS

CITY ____ZONE __STATE

(Dept. 5)

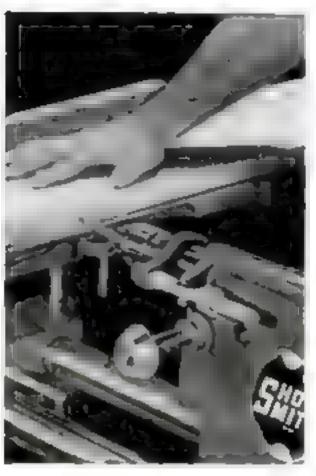
PROVE TO YOURSELF

WHICH POWER TOOL

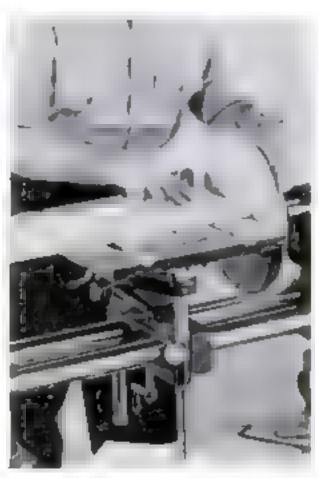
How can you do it? Easy—get a demonstration*. Not only of SHOPSMITH, but of other leading makes, too. It's the only



COMPARE CAPACITY Notice that Shopsmith's 8" Circular Saw can rip 8' panels into two identical 4' sections. What other saw can do this? And what other drill press can drill to the center of a 15" circle? What other lathe has a 15" awing? What sander has unlimited capacity?



COMPARE ACCURACY Precision is built into every part of every Shopsmith. But don't take our word for it — see how the Horizontal Drill Press, for example, dowels large flat pieces with absolute accuracy. Notice, too, Shopsmith's method for setting the saw blade right to a hairling.



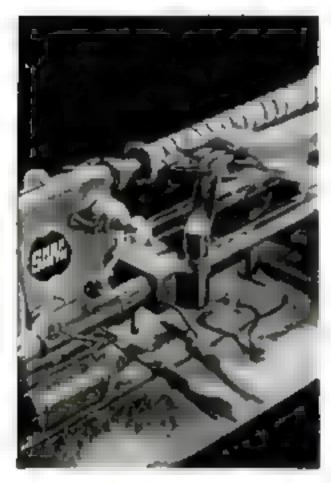
compare versatility Shors with is the five most-need big tools in one compact unit—an 8" Circular Saw, a 12" Disc Sander, a 33" Lathe, a Vertical and a Horizontal Drill Press. When you get Shorsmith, you get exactly the tool you need for every job you want to do. No special jigging.



HAVE YOU READ THE NEW McGRAW-HILL WOODWORKING BOOK? It's the most complete power woodworking book ever published! Power Tool Woodworking for Everyone has 283 pages of valuable information and 560 photographs and drawings. Only \$4.95 at book stores and where Shopsmith is sold.

IS BEST FOR YOU

fair, convincing way to pick a power tool. Here are a few points to keep in mind when you get your demonstration:



COMPARE EASE OF OPERATION Lathe's stiding headstock puts work within easy reach, allows you to face work. Swiveling tool rest slides parallel to piece being turned, eliminates need to reset constantly. Single belt and pulley facilitate speed and took changes. Makes hard jobs easy.



COMPARE CHANGE-OVER TIME And don't take classes for facts not even ours. For example, see for yourself how you can change SHOPSMITH from a Saw, Horizontal Drill, Disc Sander or Lathe, into a Vertical Drill Press in less than 60 seconds! Note quick accessory attachments, too.



Extra-long 28" table. Attaches quickly easily. Can be operated simultaneously with saw as conventional saw-jointel combination. Threehaits cutter bead cans on grange sealed ball bearings. Unique Atten-weench knife sojustmont is assest method ever devised tot jornier knite adjustment fence tills 45-45", eutomatic stope. Width of cut 4"; depth of rabbet, 16". Only \$44.96 (mounting kit, \$5,96).

COMPLETE 5-TOOL UNIT

Motor** and bench

ends extra

Chrome rest proofing now standard on all SHOPSMITHS.

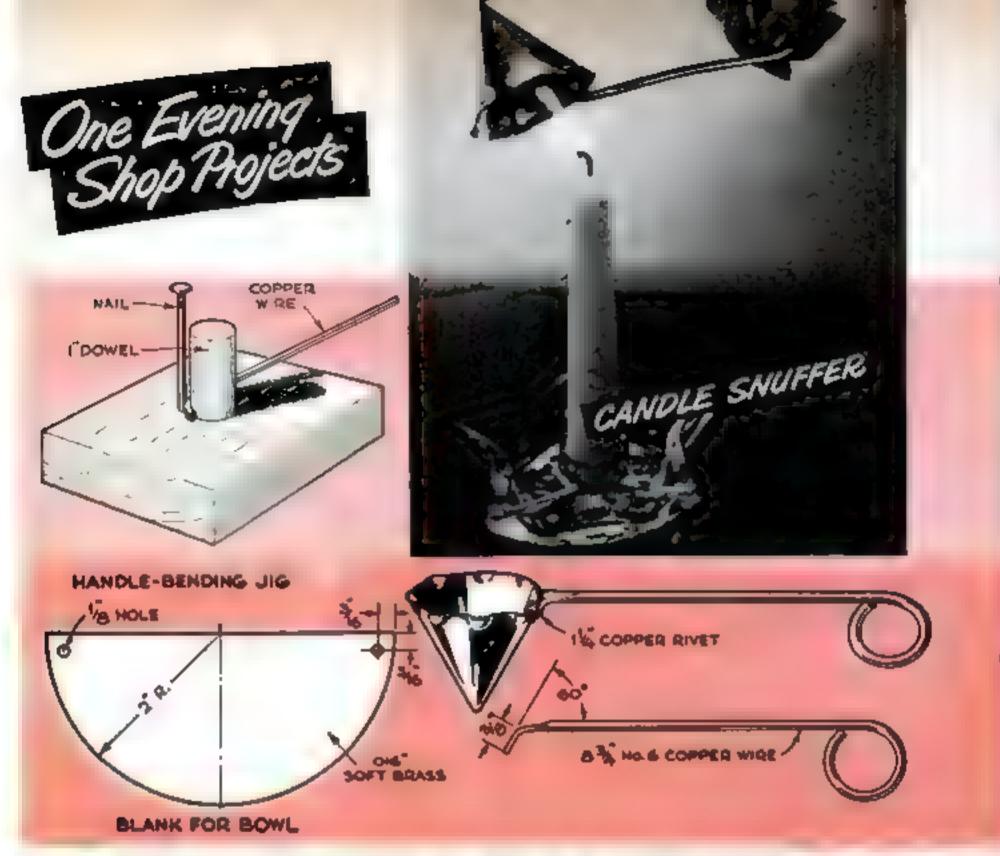
**Special heavy-duty SHOPSMITH ball-bearing motors: 3/ h.p., \$34.50, 3/ h.p., \$44.50

*See America's fastest selling power tool of leading hardware and department stores, or at Montgomery Ward. Stop in for an on-the-job demonstration. Prove to generall SHOPSMITH is the best power tool for you.



MAGNA ENGINEERING CORPORATION, Dept. 255-A at factory nearest your 12819 Call Rd., Cleveland S. Ohio, or Meals Park, California.

Please send me a free copy of the latest SHOPSMITH 16-page booklet.



If your friends are as antique-happy as mine, you'll be kept busy making these colonial snuffers. I've been sweet-talked into turning out 44 so far. They go fast, though.

Bend a finger loop on one end of the handle wire, using the jig. Then flatten, drill and bend the other end. The bowl is formed into a cone with fingers and long-nose pliers. Close up the seam by tapping with a light hammer. A cut-down copper nail or bit of copper wire will serve to rivet the handle to the bowl. Bend the flutes with round-nose phers, taking several bites and starting the flare about %" below the rim. Polish and apply clear lacquer.—William V. W. Cokelet, Middletown, N. J.

Attractive camouflage for a radiator without blocking heat-that's what this latticework cover provides. The open top dries light laundry too. It is made of %"-by-1%" stock. The crosswise slats, placed flat 1%" apart, are butted against the uprights. The latticework top is a separate unit nailed to the vertical sections. Make the cover to clear the radiator by 3" on all sides.-3-PENNY FIN SHING Peter W. Westburg. HAIL, SET AND FILL CORMER POS Santa Monica, Calif. 250 POPULAR SCIENCE

There is less excuse for not looking that word up if the dictionary is beside you on a convenient stand. This one, dimensioned for the popular collegiate editions, was made mostly from 1%" dowel and 1"-by-10" clear pine. The height and angled top make for easy reading from a desk chair.

The lower shelf has holes for the legs bored with an expansive bit 1%" from the corners. The top is heveled on three sides and a lip is screwed to the square front edge. After the legs were cut at a 30° angle at the top, sanded

and slid through the lower-shelf holes, they were pegged in place with 2" lengths of k" dowel. (Make sure the slanted tops of the legs all face the right way.) The pegs can be sawed off flush after insertion. The top shelf

DICTIONARY STAND

DICTIONARY STAND

1 = 915"

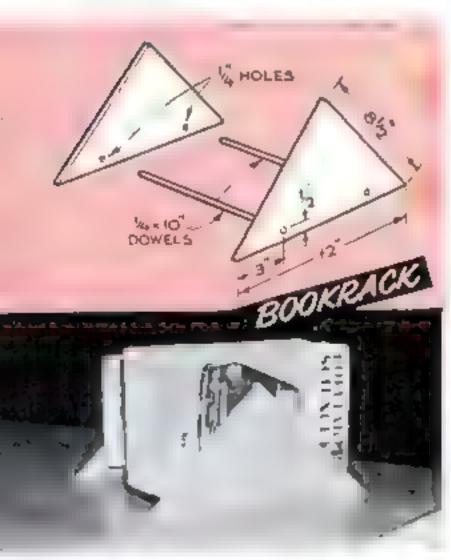
a 1014"

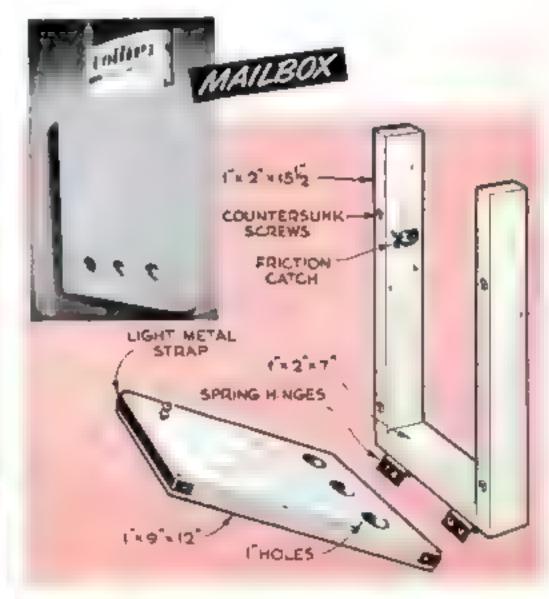
BEYEL 30"

was fastened to the legs with 2" wood screws, countersuck and plugged,

The stand shown here was simply sanded well and given a coat of clear lacquer.—E. L. Britt, Westport, Conn.

For a neat bookrack, saw two triangles from X" plywood, bore matching holes near the bottom edge of each piece and assemble with two 10" lengths of X" dowel, glued in. Sand it, finish it—and there it is.





No finish at all was applied to the 1" rough redwood used to make this simple mailbox. The rustic look blends nicely with a modern house. The frame is mounted with countersunk screws. Three holes in the door show the mail.—Hi Sibley, Nuevo, Calif.







WEATHER-VANE FEEDER can be built mostly from 14" lumber. To give pitch to roof, tops of endpieces are cut at a slant—from 12" at front to 10" at back. Collars 4" square are nailed under top and bottom to hold feeder steady on pivot made of a hardwood broom

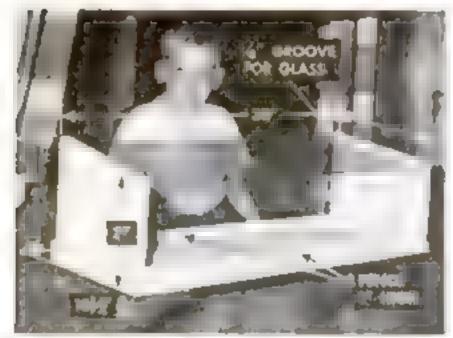
handle. Locate the collars equidistant from ends. Buck of feeder is butted inside the other members. Vanes can be made from 14"-by-6"-by-18" board; saw it diagonally. Attach vanes so they project 12". Attach broom-handle pivot 5' from the ground.



seep feeder is nailed to tree or building. Hinged cover makes filling easy. Front panel comes down to about 1" from bottom to let seeds trickle out in tray. Easy to build, feeder can be made any size desired. This one is 714" wide, 2034" high, Cover is 1134" by 14".

too reeder in made by drilling 2" holes 1%" deep in fire-wood-size log. Nuif feeder to a tree or auspend it from branch. Put suct or peanut butter in holes with seeds in-serted.





WINDOW-SILL FEEDER with glass top gives fine view of birds at close range. Length can be varied to suit window where you'll put it. Grooves for glass can be cut with handsaw. Small brads at end will keep glass from slipping out of groove. Brackets support feeder.

duplicates. These are the basic bird feeders."

"Pretty neat," said my small-fry spectator, "making one out of that log. Didn't cost a thing, did it?"

"No, but then I built these others for almost nothing, too. They're made from scrap lumber, \$" pine and redwood."

"And even from Mom's old broom,"

laughed Phil.

"That's right." I said. "I cut off part of the handle to make a pivot for the weathervane feeder."

"Will the birds really come, Dad?"

"You betcha," I replied. "In the winter, when their scant food supply is often buried under the ice and snow, birds appreciate a handout. And I figure it's only their due, because we could never have a decent garden without them."

A Chance to Identify Them

"What kind will show up, Dad?"

"Well, mostly the birds you see around during the winter—chickadees, sparrows, woodpeckers, kinglets, juneos and jays. But occasionally summer birds are known to stay north all winter if food is put out for them."

"Gee." exclaimed Phil. "I'll have a good chance to see how many I can identify. What are we going to feed them, though?"

"That's a good question." I replied, "because I expect you to keep the feeders stocked. Once you start feeding the birds you should keep it up until spring. We'll try to attract all kinds. That means we ought to put out sunflower seeds, mixed seeds, ground peanuts and peanut butter. Fat trimmings and stale bread help too.... Come on, this feeder is done—let's put it up."—Jerry Parker, Sonoma, Calif

This is a Syncro Electric Jig Saw that is a complete unit in itself. You can carry it

home under your arm, set it on a table or work-bench, plug it in, and proceed to work on it.

Now this blade gives you 14,400 smooth strokes per minute, just about 5 times as fast as the ordinary jig saw blade. It is especially well suited to delicate fret saw work and it always cuts that smooth edge that requires no sanding. This last feature alone will save you many



hours of time which you would ordinarily spend sanding such things as what-not shelves, magazine racks, fern stands and the many other things that you will like to make.

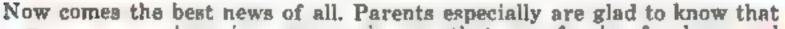


sanders.

You will find that all the forests of the world are right at your elbow to provide you with rare and beautiful materials for your handicraft. But even with that, you are not limited to wood. Plastic materials are now appearing in a large variety of colors.

For instance, catalin, a molded plastic. It is comparatively easy to work on this jig saw and takes a beautiful polish. Not quite so easy to work, however, as bakelite. Bakelite, for a cast plastic, is hard and brittle and

the ordinary saw cuts kind of a splintered or split edge on it. But the high speed and the fine teeth in these Syncro blades always insure a clean cut. You will find that these various plastic materials are particularly nice for working out such things as monogram pins, belt buckles, picture frames and wall lamps.



girls to use. Accidental injuries on this machine, even the slightest cuts, are very rare. Serious injuries are impossible. Now that may seem strange to you but the reason is very simple . . . the Syncro blade does not "pull" the "work" or finger towards it as belt-driven jig saw blades do.

If you happen to have seen a Boy Scout Troop doing handicraft metal work, you will always find a jig saw one of their main tools.
Perhaps you have various ideas that you would like to work out in metal;
a name plate out of aluminum, a shadow tamp out of copper, or book
ends out of brass You can do all these things on this same machine using
the same one blade to cut all those different types of metal, as well as
wood, cardboard, etc.



And remember that you can do all these things without a great deal of expensive equipment. Actually with only one machine—one jig saw and one blade—one saw you can carry home under your arm, plug it in and go to work on it.

It comes complete with 6 blades and there is nothing else to buy. No belt, no pulley, no moter, or anything else. It is all complete

(including built-in motor) in this one unit. The built-in power unit is also guaranteed against burn-out all during your ownership or is replaced free. Syncro is a precision-built, UL-Approved, durable tool and will last a life-time. Syncro electrical precision products have been made for 30 years. Your hardware dealer should have one on display.

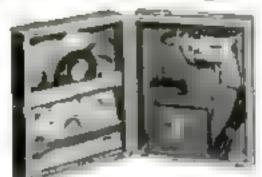


However, if he is out of stock or no store is near you, send only \$24.95, direct to Syncro Corporation, Dept. G-103, Oxford, Michigan, and your Syncro Jig Saw No. 201 will be shipped to you postpaid. Use it 10 days, then if it does not please you 100°c, return saw post-

paid to Syncro and your money will be promptly refunded. Or send postcard for Free Circular of Syncro saw and Syncro

NOVEMBER 1953 255





NEW!

'4" Deluxe

DRILL KIT



Makes home repairs, projects easy! Includes & Utility Drill, horizontal stand, wire wheel brush, grinding wheel, arbor, 13 drill bits, paint mixer, sanding pad and discs, in steel case.

DO 1001 JOBS!

Home chores actually become fun when a B&D Drill replaces hand labor! Remove paint & rust, sharpen cutlery, put up shelves faster, easier and neater!



NEW! %" All-Purpose DRILL KIT



Includes: M" All-Purpose Drill, 7 drill bits, 3 wood bits, countersink, sanding pad and discs, polishing bonnet, electric wax, and point mixer, in fitted steel box that can be mounted easily on your workshop wall and quickly removed for carrying to the job. The perfect Christmas gift!



No. 44 SANDER Fast-cutting, powerful orbital sander gives satin-smooth finish on wood or metal, eliminates hand sanding. Powered by B&Dbuilt motor. Only \$46.95

For free backlet,
"Handy Tipe for
Handy Men," full
of lints for home repairs and projects,
write: Bob Davis,
Dept. H118, The
Black & Decker
Mro. Co., Towson
4, Maryland.



Gus Goes Hunting . . . for Trouble [Continued from page 198]

Harvey stepped on the starter, but the engine only cranked.

"That's tough luck! I'd better check your

ignition,"

"Ain't much time left. Can't you get on your horse a little. Mr. Wilson?" There was irritation in the Texan's drawl now

"I'm going as fast as I can."

Gus checked the ignition wires all the way from the switch to the coil and the distributor, and to each of the plugs. That took another precious 15 minutes.

Gus Hangs on to His Temper

"That wasn't it, either. I'll be damed if—"
"Are you checkin', Mr. Wilson, or just
guessin'?" Bill Harvey asked.

Gus controlled his temper and went about his work. The last item he checked was the fuel line. From tank to pump, he checked carefully. There were no breaks in the line, and no kinks from the rough going. The flex line by the pump was clear, though it did seem to be harder to blow through than it should have, "Try it now, Mr. Harvey."

The engine caught after a minute or so. But as before, it ran only long enough to

get warm before the engine died.

Gus had a glimmer of an idea then. The flex tube had offered a little resistance to his lungs. It lay close to the hot engine, but it had been only warm when he had blown through it. Now that the engine had run again for a short time, the flex line was warmer. What if—it was just a hunch—but Gus detached the line again and tried to blow through it. This time, it was completely blocked!

A Quick Hunch Pays Off

"Well, there it is."

"That flex line? Why was that so hard to find?"

"I'll tell you why. This line has that long-lasting metal weave on the outside. But the inside is just lined with synthetic rubber. You know how rubber gets brittle and cracked when it's old. It finally gave out on you, and every time the engine gets warm now that section expands and twists enough to block your fuel. When you let it cool, it settles back and lets fuel pass through. Luckily, I've made the habit of carrying a couple of spare flex lines in my kit. You'll be on your way in a minute."

[Continued on page 258]

"PINE PANEL" YOUR WALLS

with Gold Bond Gypsum
Wall Planks...the newest
in Gypsum Wallboard!

It's an easy, one-man job to put these new lightweight planks right over dull, drab walls. Prefinished Gold Bond Knotty Pins and Bleached Walnut give you the beauty of fine wood paneling at a fraction of the cost. Standard Wall Plank can be painted, textured of wallpapered. See your Gold Bond lumber and building material dealer today!



(2) A special Gold Bond Laminating Adhesive is all that's needed to apply these wall planks. Just mix the adhesive with water, spread on the back of the panels and press into place. No joints to conceal, no natheads to treat.



(4) Apply first plank at a corner. Press plank firmly against the wall to insure even adhesion, and use a carpenter's level to plumb, Install three planks and re-plumb, Then continue across the wall.



(1) Gold Bond Gypsum Wall Planks are only 16" wide, weigh only 16 lbs. in the 8' lengths. They are simpler to cut than wood—just score and snap (above), or saw if you wish. Unlike wood, they are FIREPROOF!



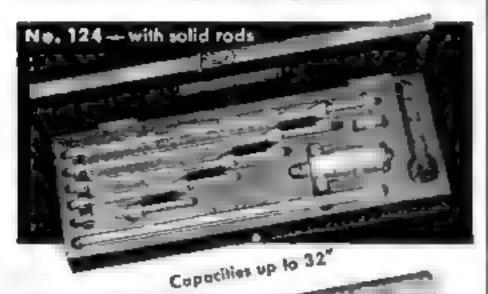
(3) Here's how you spread the adhesive on the plank. Your Gold Bond lumber and building material dealer will supply this 3-notch spreader which simply slides along the plank leaving three straight tidges of coment.

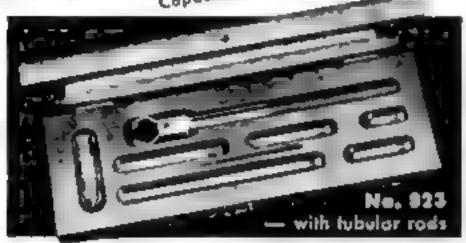
NATIONAL GYPSUM COMPANY . BUFFALO 2, N.Y.

Fireproof Wallboards, Decorative Insulation Boards, Lath, Plaster, Lime, Sheathing, Roofing, Sidings, Wall Parot, Textores, Rock Wood Insulation, Metal Lath and Sound Control Products.

MAIL COUPON TODAY! MATIONAL SYPSUM COMPANY Bopt. PS-115, Bullelo Z, H. T.	Gold Bond
Please send me a comple remodeling system, and complet Gold Bond Gypsum Wall Plank	te description of this new te instructions for applying is.
Name	
Addents	
Сів	ZeneState

Starrett chrom. INSIDE MICROMETERS





Choose your favorite from these two excellent inside micrometers. No. 124 has small diameter solid rods while No. 823 has light yet rigid % "diameter tubular rods. Both have Satin Chrome Finish on micrometer heads to eliminate glare, retard corrosion, increase reading speed and accuracy..., also, hardened and ground contact surfaces plus compensation for wear. See them today — at your Starrett Tool distributor's.

SEND FOR IT — ONLY 10¢
Starratt "Tools and Roles" Book
shows the right took for any measuring job.
50 pages, 100 pictures, helpful reference
tables, Address Dept. P5



THE L.S. STARRETT COMPANY ATHOL, MASS., U.S.A.



DIAL MORCATORS - STEEL TAPES - PRECISION GROUND FLAT STOCK

Gus Goes Hunting . . . for Trouble [Continued from page 256]

Gus connected a new line to the pump and started the engine. It kept going.

The Harveys and Gus piled in, and began a jolting, tree-dodging rampage down the hillside. But it looked as if their wild ride would be in vain. By the time they got back to the road, it was only 12 minutes before the contest deadline, and Gus figured it was at least seven or eight miles into Parsonsville.

Nevertheless, Gus hurried as he climbed into his truck and wrote out a bill.

Gus's Turkey Dinner Flies Away

When Gus arrived back at the garage, and looked questioningly at Stan Hicks, the boy shook his head. "I told you, boss, you'd better buy a turkey!"

"I guess I'll have to settle for Sam's hamburger," Gus grunted, starting for the back shop to close up.

He was hardly out of the office door when the phone rang. Stan answered it.

"For you, boss,"

"Hello, Gus Wilson speaking."

Bill Harvey's unmistakable drawl drifted

through the receiver.

"I reckon you're pretty disgusted with Texans at this point, Mr. Wilson. I'm afraid I wasn't a very good example of that particular nationality today. I was pretty sore at my car, and when I thought we were going to miss that contest . . . Well, I want to apologize for takin' it out on you."

-But Something Better Turns Up

"Thought you were going to miss it . . . Did you get there in time after all?"

"Sure did, with at least half a minute to spare, and our buck won hands down. We're home now—over at my boy's place—and we got more deer meat here than we could get away with in a month o' Sundays. We were wonderin' if maybe you'd give us the pleasure of your company at Thanks-giving dinner tomorrow . . . We're havin' venison steaks."

Definitions

BROUGHT before the court, the motorist declared.
"Your honor, I was not drunk. I had only been drinking."

"That's different," said the judge. "In that case, I'm not going to send you to jail for a month-only for 30 days."—The LIFE Aetna-Izer.



"...and bring Daddy some Bonney wrenches"

Daddy's been prompting this lad. Not a had idea, either. A word to the right person now will pay off at Christmas.*

Any man wants wrenches he can be proud of. That means Bonney wrenches—mechanics themselves call them America's finest.

Your Santa Claus can buy Bonney wrenches wherever fine tools are sold—in open stock or complete sets.

Bon-E-Con tools, also, carry the famous Bonney guarantee. They're tools any man would value—at prices anyone can afford.



* Confidentially, men, it would be smart to leave this page where the right person can't miss it!

Moon's Mysteries Challenge Spacemen

[Continued from page 130]

the ground, surface swellings called "doines," and unexplained whitsh "rays" extending from some craters—perhaps streaks of volcanic ash deposited by the last explosions of dving volcanous. An impressive spectacle will be the Straight. Wall in the Sea of Clouds—a sheer 800-foot cliff, 60 unles long. Its nearly vertical face remains blistering-hot after the ground has cooled, for it receives the setting sun's rays head-on.

Diesent Scenes Will Look Ghostly

Vividly the scenes will contrast with earthly landscapes—for these gaping craters, these jagged mountains, have been untouched by wind, ram, or frost.

These ancient scenes will look ghostly because nature has painted them in monotone. Shades of ash-gray, and the black shadows, replace the earth's bright colors. But picture-takers bent on shooting color film may discover a few rare exceptions. Most noteworthy example is

a short live I ruddy glow, first seen in the 1830s and only twice since, near the little crater. Lichtenberg. The last time, in 1951, it lasted half an hour. Undoubtedly it's seen, the guidebook's author holds, when the sun's rays fall at a certain angle on "some unusual surface deposit"—autother first-class invitery for future lunar explorers to investigate.

END

Next Month: Watch for a Capt. McLann Ship Model

The world's fastest chipper ship, Sorgregar of the Sem, sails a are on the pages of Port Lyr Setting Movinty in December Stepsly step instructions for building a county to order of this famous ship, based on the order of plans by Capt. E. Vrantage St. Cann. Id-listed in PSM nearly 10 years with make this a fascuration point for ad a letter by, step hours



*CHRYSLER CORPORATION'S "deep-breathing V8"

NEWEST, MOST ADVANCED CAR ENGINE

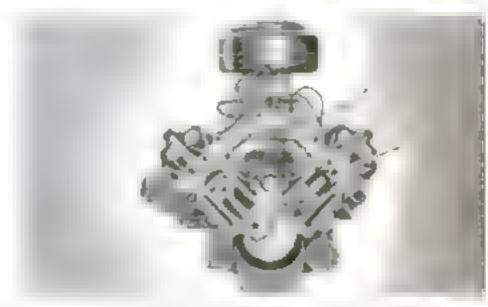
Compact, low-friction engine inhales and utilises air and fuel more efficiently . . . gives you greater performance and safety, even on steepest mountain roads.

Practical imagination that brings you the good things first. This deep-breathing, high efficiency engine has enough reserve power to handle with ease rugged terrain like that found on Nevada's Route 50.

What's happened to automobile engine design?

At Chrysler Corporation, something spectacular! America's most advanced car engine, the V8 hemispherical combostion chamber design, is already firming gasoline into power more cleanly, more efficiently, than any other power plant for passenger cars.

This extraordinary engine, which is now being emoved by Chrysler, De Soto and Dodge V8 owners, actually breathes deeper theough the wider, straighter fuel passages. Valves are larger, open wider. Spark plugs fire directly above pistons. So efficient is performance that the engine doesn't "carbon-up" with resultant power loss.



Cutaway view of Chrysler built V8 engine showing (1) dome-shaped chamber (2) bigger high-lift valves. (3) wide (vel channel.

The new engine is another example of how practical imagination puts more value and worth into Chrysler Corporation cars. To get the "feel" of this Chrysler-built V8, call a Chrysler, De Soto or Dodge dealer for a demonstration... today!

Chrysler Corporation produces Plymouth, Dodge, De Soto, Chrysler & Imperial cars and Dodge Trucks, Chrysler Marine & Industrial Engines, Odite Metal Powder Products, Mopar Parts and Accessories, Airtemp Heating, Air Conditioning, Refrigeration, and Cycleweld Cement Products.

You will enjoy Medallion Theatre—
dramatic entertainment for the whole family on CBS TV.

How to get more mileage out of your motoring dollar



SHIFT WITH CARE

Use low and second gears corefully when starting, it's the mark of a good driver to shift at low speeds —

thus avoiding excessive engine wear and gas consumption. Experts agree the most economical shifting speeds are: low to 2nd—about 5 mph; 2nd to 3rd—between 10 and 15 mph

Wash with a mild detergent or auto soap. Strong cleansers quickly wash away protective wax coatings . . . may wear paint. After a good wax job, water alone should get the



NEVER USE STRONG SOAP

car clean. Later, a little mild soap or detergent may help. Frequent washing keeps gritty dirt from working into and damaging the finish.



PINEST OIL FILTER

Keep a clean oil filter on the job. Your oil filter traps engine-wrecking abrasives and sludge out of engine oil. In time, however, any filter loads up—gets so clogged it can't filter anymore. Before that happens, put in a new Purolator Micronic* Refill. Accordion-pleated,

plastic-impregnated element has up to 10 times more capacity than ordinary filters... stops dirt you can't even see. There's a Purolator* engineered for every make of car and truck. Refills cost as little as \$1.60. Takes

Refills cost as little as \$1 60. Takes just a few minutes to install.

Ones U. S Pat Off

Check your oil filter every time you change your oil





Today's Pirates Sail the Highways

[Continued from page 11]

What can other truckers do to foil the highway pirates? Here are some of the ways suggested at this year's FBI conferences on the problem

 Trucking firms should more thoroughly investigate people before faring them. They might uncover potential fin-

ger men.

2. Warehouses, yards and loading docks should be constantly protected by watchmen. But even watchmen have been tricked. Therefore, central station alarm systems should be used. These may be either automatic or require periodic calls from the watchmen

3. Trucks should be protected by alarm systems of their own (PSM, June '50

p. 136).

 Guards should accompany the more valuable loads.

Two men should be assigned to every truck making pickups and deliveries.

6. Drivers should be more alert. They should never leave trucks standing unlocked, or with their motors running, at coffee stops. Nor should they ever leave trailers parked beside the road.

In other words, simple common-sense precautions would make it a lot harder for today's pirates of the highways to raid successfully

Rail Oddities

Figure rolling is a Westerner a Yanker and a Southerner were discussing their respective regions. "Out in Idaho," said the Westerner "you can board a train and will eat charging cars, travel from Cornell to Yassar, Stanford Yale, Harvard, Princeton and Wellesley in a distance of \$5 miles."

"Well," drawled the Yanker "back in Matne where I came from with a lew changes of cars, you can travel by rad from Calais to Dover, from Peru to Stockholm, from Paris to Lisbon

and Poland to Norway

"Aw shocks," drawled the Southerner, "that's nothing to brag about. Why, when I was a lad in Florida one could travel by radioad from Venus to Mars and Jupiter—all within a single county?"

And they all spoke the truth.—Rock Island News Diggs.



EASY ON! EASY OFF!

the property of the second) Chils can - 15 E 1 12 F 6 FED K V with cold hat some pripage to be true

Here's Why Craftsmen Approve ... Use . . . Only Straight-Line Action Sanding!

of the second of the second of Corporal is she for a sold the laste of the Sa Inchia Start of a contact of a second 4 or F the Original a said

TRATON CC053.

GRRITAL 151051 Action

ARC 147033 Action











SEE YOUR FAVORITE DEALER DI : | Tools are sold at hetter dealers everywhite. If your dealer can thomply order died at a fix day that comey-look gurrantes
R h I n Cb and we wrise p postpaid
Or sort mix \$1 % n w pay postante wis
not p as postag and \$10 D co

White positivity to the test vessel by the greatest sander poles to trade a tout ket

6 2000 to keeps and temporal process belts shown and to a way at dott place Dt to (Sheeps) time Action to the case of sealing and the sealing sealing





DREMEL MODEL "2000" SAMPER-POLISHER

Moder 2000 Sander Polisher 25 axel d abragines 1 polish and in sturdy 524 50

DREMEL MODEL "A" SANDER-POLISHER-MASSAGER

The property of the control of the c Model & Sander-Pol spor Mantagre & altratives \$14.85

Masonite week-end project



Now! Make your utility room more attractive. Build this launder tub cabinet that doubles as a sorting table. It's easy—when you work with strong, smooth Masonite Tempered Presdwood®. Won't snag the finest fabrics. Not affected by water, steam or beat. Fasy to cut and fit. Can be painted in attractive colors.

Free plan also tells how to make enclosure for water heater—including storage space for ironing board and laundry supplies. There are scores of ways to use these dense, grainless, all-wood hardboard panels around the home. Send coupon today.

See your local building materials dealer for MASONITE FRESDWOOD PRODUCTS

A type and thickness for every job!

- Standard Fresdwood—
 1 1 3 5" 1 1" and 5, 10" that.
- to Temperad Previowed brisen 1 8° 3 16° 1 4° and 5 –6° thick Black in all hel 5 16°
- Temprille* 12*
- # Tempered Deelex bith see smoth! 4-ft and 5-ft unities 1° 3-16° and 4-0 bits
- Leatherwood—1 ff
- Panelwood 3 16" and 1 4" thick

Better Hardbourds for Better Hame Projects

Corners Cor

The Best Christmas Toys You Can Build

[Continued from page 1991]

Z e

The blocks were sanded perfectly smooth but given no other finish at all. That way they are safe if a baby feels like chewing on them

Each of these pieces of equipment is many playthings in one. The rocking boat is a gentle swing for tiny children with a broom for a mast it becomes a sailing vessel upended it is steps for toddlers to climb up and down. The sawhorses are ladders, cowboy poinces, seesaw and walking-board support. The cargo net is also a hide-out for children who crawl behind it. The possibilities are limited only by childish to ignitation—and that is limitless.

Children of all ages like this kind of play equipment. They are long-time favorites at our play schools ones that the kids will always come back to after discarding so ac intricate toy that holds their interest only a short time. Don't think that older children will reject the blocks, for example, They need a bugger assortment than tuddlers, and use them differently, but just as norch, Where a two-year-old simply piles one totop of another, the 11-year-old becomes a builder-architect, creating whole cities (carplete with skyserapers, bridges, even statues. The same is true of the cargo net: the older child just chimbs higher and faster than the conniger mae.

Child's It by of Learning

But perhaps the real reason these are good for home play is that they are toys a child needs. Play equipment plus supplementary toys are not luxuries but necessities of childhood.

Play is simply a child's way of le ruing. Babies must learn to pick things up. Teen agers must learn to use their ingeninty and creative ability. And good toys and equipment are increty tools for them to learn with Lacking these special tools children will improvise not always to suit their parents. If there is no climbing ladder bandy, they will still climb and jump probably on the piano.

A Challenge

IF you think old soldiers just fade away, try getting into your old Army uniform.—The Columbian Crew.

Be the Perfect Host with this Easy-to-Build Bar

Picture this attractive, roomy, movable cabinet-bar of beautiful Weldwood birch in your home. Makes hosting a pleasure. And you can build it yourself very simply from Easi-Bild Pattern No. 189.

Plans show every step, every detail of construction. All you do is order the list of materials specified on the envelope, follow the simple directions and assemble. Easi-Bild patterns and beautiful Weldwood paneling are both available at your lumber dealer.

If you prefer, send 35¢ in cash or money-order for Easi-Bild® Pattern No. 189. Send 35¢ additional for 36-page pattern catalogue illustrating over 180 other pattern projects.

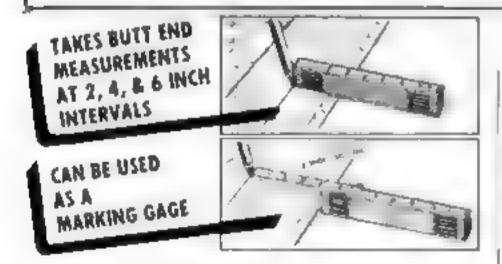


Any weekend carpenter can build this bor at a fraction of what it would cost ready-made

UNITED STATES PLYWOOD CORPORATION

World's Largest Plywood Organization
Pattern Department, P.O. Box 215, Pleasantville, N. Y.

T.M. Reg.



New LUFKIN No. 466 BUTT SPACING RULE

Unique 4 Inch first end section permits taking measurements or using as a merking gage at any even numbered interval, Ideal for 12", 16", 24" centers. Has all the famous Lufkin RED END features.

BUY LIFKIN TAPES . RULES . PRECISION TOOLS AT YOUR HARDWARE OR TOOL STORE



THE AMAZING STORY OF MEASUREMENT

LUFRIN RULE CO., Bapt. PS, Seginger, Mich. Please send me this fascinating backlet. Enclosed is 10c (no steerps) to cover handling and Marting.

NAME.

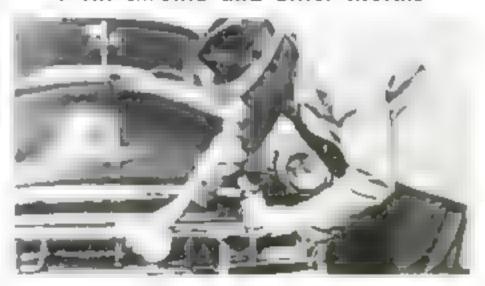
ADDRESS.

CLIA

STATE

REMOVE RUST EASILY

from chrome and other metals



METAL TREAT is also an excellent rust preventative and metal pre-primer

Just rub on concentrated Metal Treat and unsightly, damaging rust comes right off automobile cliners, tools, o tdoor furniture, machinery and other metal sertaces. And, before you paint any

metal surface, prime it with diluted Metal Treat to prevent rust and make paint stick (12 oz. bottle makes full gallon). Metal Treat is sold by most paint and hardware stores.

METAL TREAT

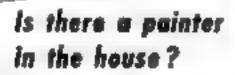
Another quality product of THE KLEAN-STRIP CO., INC. 2364 S. Lauderdale, Memphis 6, Tenn.

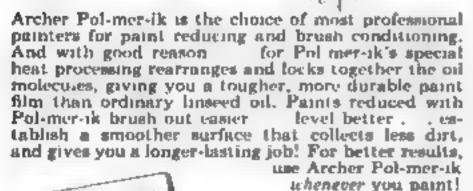
FINE WOOD DESERVES



- Refinishing Antiques
- · Glazing Windows
- Protecting Tool Handles
- Preserving Paint Brushen
- · Protecting Ladders

Yes, for preserving fine woods . . . and for an unending variety : of other daily uses both indoors and out . . . you'll find Archer Pol-mer-ik the handfest single item in your home or shop







Get your copy today, Shortcuts and painters from the "pro's", based on practical experience. Free no obligation, Just drop a card to: Archer-Daniels-Midland Co., 604 Rosnoke Building, Minneapolis, Minn.

How You'll Get TV Colorcasts

Continued from page 1211

the face of your tube. That's where your set goes to work.

What happens in the set?

Your color tube will have phosphors on its inner face. They're the same things that fluoresee to create a black-and-white picture. But the color-tube phosphors will produce the "primary" colors of red, blue and green. Mix them, and you can create any color you want.

The three phosphors carrying the individual colors are arranged in little triangular clusters. On present color tubes there are about 600,000 phosphor dots in 200,000 clusters.

In your color set will be three electron guns, one for each primary color. Your present set has only one gun. Each gun shoots its appropriate dot in the cluster. The dots light up and create color.

What makes color guns so accurate?

A battle plate or shadow mask is interposed between the gun and the face of the tube. It's full of tury holes, A gun can shoot its particular color because it's forced to make "angle shots" through the holes in the plate. Each color in each cluster is lined up neatly to receive a shot from only one precise direction.

But how do you get a mixed color, say a reddish-purple?

The viewing camera has three image ortheon sensing tubes, one for each color. They are excited exactly in proportion to the primary colors in the light presented to them through the camera lens. Purple is a mixture of red and blue. For reddish-purple, the red tube experiences full excitement, the blue not so much. In your receiving set, the electron guns are excited in proportion to the signals supplied by the camera tubes. So the red in the phosphors fluoresces brightly, the blue not so much, Reddishpurple results on your screen. The eye merges the small dots and sees them as mixed colors.

[Continued on page 268]

Reserveed for speedy appearance os well as performance, this 1915 Statz Bearont was one of the most popular sport models of its day.



To BUICK Wildcat

ACs Have Been Factory Equipment On Nearly as Many New Cars as All Other Makes Combined



smooth-flowing power of its Fireball V-8 engine.

Quite a contrast in their contours—but they're both distinguished for their design, and their AC-sparked performance.

AC Spark Plugs provide superior performance because they have today's best spark plug insulators-patented CORALOX. CORALOX resists, to a far greater degree than any previous insulator, the formation of oxide and carbon deposits which

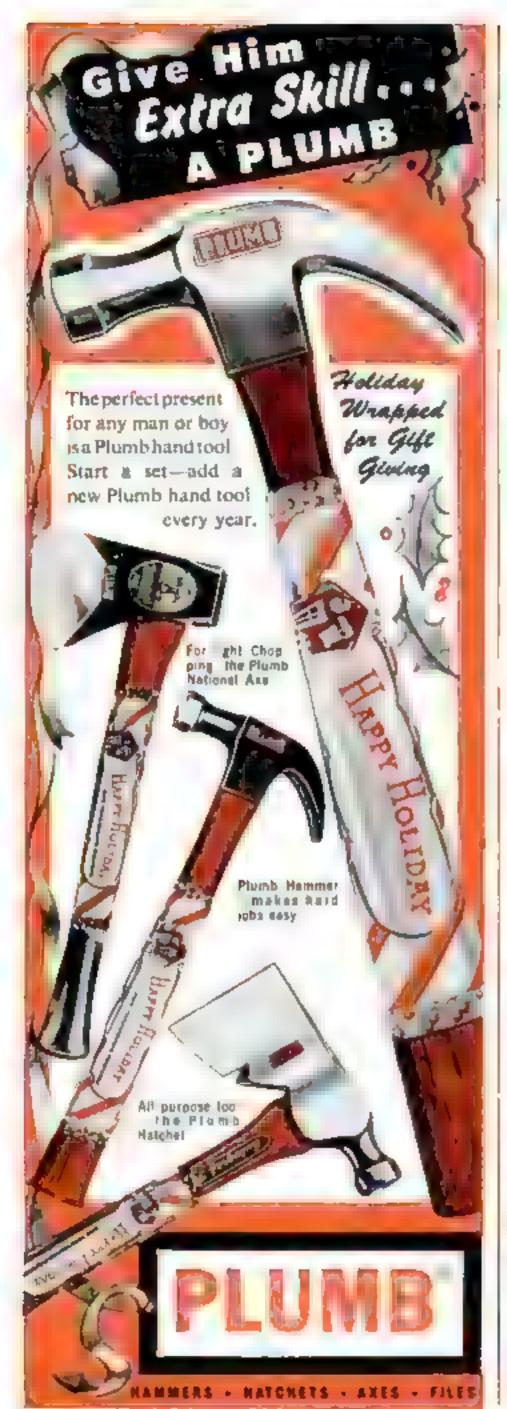
cause "shorting" and intermittent missing-

 ROBBING ENGINES OF AS MUCH AS 10% OF THEIR POWER WASTING GASOLINE BY AS MUCH AS ONE GALLON IN TEN

No matter what make or model car you drive-for the "payoff" in power, performance and economy, get a new set of ACs.

PATINTED





How You'll Get TV Colorcasts

[Continued from page 266]

How long do phosphors stay lighted?

Less than a tiny fraction of the time it takes you to blink.

Then the guns keep shooting them?

Yes, the whole batch, 30 times a second.

Are the phosphors shot line-by-line?

No, every other line is skipped. When the guns retrace, they shoot the lines they missed on the previous trip

What kind of programs will color be

Name it yourself and you'll probably hit it. The musical extravaganza shows—NBC's Show of Shows and the Lucky Strike Hit Parade, for instance, They're talking about doing colorcasts from the Grand Canyon and Santa Catalina Island's submarine gardens. Fashion shows will be a color must. So will flower shows and those cooking-school daytime shows for the housewife where the camera focuses on yellow egg yolks, green peppers, red paprika, orange-ice desserts and golden-brown roast duck.

Will colorcasts be on film or "live"?

Live, probably. Color movie film is four times as expensive as black-andwhite and costs four times as much to process.

Will there be reception interference?

Possibly, here and there. Color signals are slightly more susceptible to interference than black-and-white ones.

is RCA Victor the only company that will make color sets?

No, most of the other companies are now licensed to make color sets.

Will all the networks carry colorcasts?

Ultimately, yes.

They were working on color TV five years ago. What's held it up?

[Continued on page 270]



you can DO so much MORE so much BETTER with an Atlas 15" DRILL PRESS

lf all drill presses in the price range of the ATLAS Model 1060 were lined up for your inspection, your choice would be easy. On a comparative basis the 15" ATLAS is a standout value. The head is almost twice as heavy, and this, with the balanced overall design, assures maximum accuracy and rigidity. And if you compared performance, the ATLAS would earn your overwhelming preference. Built to strictest industrial standards for actual production use, the 15" ATLAS costs no more than ordinary drill presses. Send coupon or postcard for full information.

DON'T BE IN HURRY.

Investigate Before You Invest! Be Sure Your Drill Press Has These Important Features!

- Biggest, heaviest head with the widest speced column bearlings for maximum accuracy and rigidity. Remember, the house is the heart of the drill proce.
- 2. Table, column, and base are of heavy-duty industrial weight for more accurate work and really someonetch performance. Selenced design throughout
- 3. Exclusive Rooting drive with six splined spindle and drive stoors for maximum accuracy
- 4. Four widely spaced sealed-for-life ball bearings . . . two on drive sleeve, two on spindle . . provide greater accu-tacy, smoother, quieter operation, longer service life.
- 5. Exclusive neoprene quill stop bumper assures shock-proof reform . . . lengthens tool life.
- Machine ground table may be titled to any angle, right or left.
- 7. 41" work capacity over table, 46" ever base. Handles bigger jobs
- 8. Quick-positioning, direct-reading Vernler depth control stop . . saves salup time
- 9. Built-in switch, coordinate clamp locks, column collar, adjustable feed tension, 3-spoke feed wheel (all furnished) ... combine to give better control.

1777

WRITE

TODAY

T CATALOG

AMERICA'S FINEST Cross section of the massive still head shows anchusive ATLAS floating drive, stated-for life ball bearings and pre-

sition ground spindle and quill.



THIS YEAR — GIVE HIM AN ATLAS GIFT CERTIFICATE	
9-	
P. S. S.	arlar

ATLAS PRESS COMPANY

1125 N. Pitcher St., Kalamaron, Mich.

- ☐ Please sond Iron Brill Press Catalog
- Enclosed is _____ for 20 7LAN BOOK Site
- 18 PLAN BOOK 50c

(65c outside U.S.A.)

ADDRESS...

CITY. STATE.

"DO-IT-YOURSELF"

with these low cost, practical

PLAN BOOKS

 20 PLAN BOOK — Ori inal furniture desig by noted authority.

2. 18 OUTDOOR EQUI MENT — Woodworkin Plans.

SOLO ONLY THROUGH FRANCHISED ATLAS BEALERS



Porter-Cable's new Dustless Finishing Sander anoffs up 91% of the dust are prevents it from drifting about the house. Keeps celtar workshops clean. Eliminates the usual mess when doing lande repairs and remodeling. Lets you work on hobbies, refinish furniture, right in your living quarters.

Super-fast—Super-smooth

Outspeeds hand sanding 10 to 1 — actually surpasses it for fine finishing. Abrasive pad rotates at high speed in 14" orbits. Won't scar of mar. Flat surfaces are made states smooth. Plywood is edged or rounded without chipping Butt joints and inlays are pollsh-sanded with no hatch marks. On drywall joints and plaster patches, you're no longer exposed to the ansatoying, choking dust.

Important features

Motor-driven for long, hard mage, AC/DC-4,000 RPM under food, Gegreless drive - no troublesome operation, no expensive repairs. Patented paper clamp - keeps abrasive timooth and tight Light - weighs only 6 lbs. Over-pized dust bag available at extra cost.

See Your Porter-Cable Dealer

 Get all the facts and a free demonstration. Or mail coupon for illustrated descriptive felder.



ideal for cabinet work

Indard Abrasive change

Porter-Cable

PORTER-CABLE Mechine Co	Quality Electric Tools
1471 N. Salina St., Syrac	
(In Canada, send to Str	angridge, Ltd., London, Ont.)
	and uses of new Dustless name of my nearest dealer.
Nome	

Manufacturers of SPERDMATIC and BUILD Blockic Tools

.County...

How You'll Get TV Colorcasts

[Continued from page 268]

The fact is, they were working hard on color TV before World War II. The sheer magnitude of the job of perfecting it caused the delay. An argument in the industry and the FCC over compatible and incompatible systems added to it.

Will I be able to get black-and-white reception on my color set?

Yes.

When the man comes around to install my color set, what should I know about the quality of the picture?

Your color image will depend on three elements: Brightness is the over-all intensity of the picture. It's the only attribute of color shared also by neutral or gray tints, such as those on your present set. Hue is the distinction between redness, yellowness, greenness and so on. Saturation is what makes the eye separate strong colors from pale ones of the same hue—as red from pink.

Your serviceman will also check the definition and resolution of your color picture. Definition means how sharp the image is. Resolution means how small an object you can see clearly.



Theu're mechanics at an Air Force Base. The speaker is telling about a jet pilot who was just cruising to burn up fuel (boring holes in the sky) when the jet engine lost a turbine blade (threw a bucket).





Simply offsich with a servedness to flush
dear, physical, etc. Make tables, couches,
beaches, emderace old and woperful
formitiers. RUST-RESISTANT, matter stath-
Seets Att persons perioded Perchand.

NOTE AND FIRE SIT OF A SIDE

Logist	Specify to try to	to the
61	3 5 55	13.25
91	5 75	5.45
15.	5 35	5.63
14	5.63	5.85
16	6 95	5.95
141	7.95	8,25
22	1.95	
281	13.45	2.00

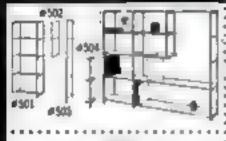
FEATURED BY POPULAR SCIENCE

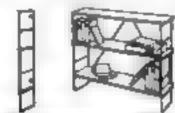
COOM BUILDING

The latest decorating visa, Make any shape count divider bookcase, altum rack, etc., using combinations of loar with and 2" 3 12" harris #501-50" high, \$16.95; #502-27" logit, \$4.25; #503-50" logit, \$7.9% #504-321/s high, \$4.95 Express charges collect

DUILD BOOKCASES ANY LENGTU

Smart sturdy wrought won frames. Painted and rest-resistant Make your gon book gases to stand or hang an the wait by adding 1 is 10 boards from your local number yard All screws and braces included Single Traines \$4.50 each. \$8.90 per per perland.





FREE BOBALET "Besign and Build Your Swin Modern Furniture"

Buy Direct from The Factory And Save E. F. LAWRENCE IBON WORKS Dept. [] 2911 31 Whitt er B vd., Los Angeles 23, California



WORK FROM A PAPER PATTERN - STEP-BY-STEP DIRECTIONS

With East-Bild* Build It Yourself Pattern No. 86 you con have a garage door with Stanley Swing-Up Hardware — for less than 16 present costs? Pattern talls what materials to buy, where and when each is used. No special tools or skill required. Install the Stanley Garage Door Set with hond took,

You'll be amased at how easily and economically you con build a professional looking door by following the step-by-step procedure autlined in this pattern. Ask your dealer for Simplified Directions for Installing Stanley Gorage Door Hardware, and East-Bild Fattern — or send covern below.

Trode Mark Rep. U.S. Pet. Off - Equilible Pattern Co.

	ŀ
EASI-BLD PATTERN CO., Dept. S-S, Pleasantville, N. Y.	
Enclosed is 50c to Cole, Maney Ovder, Check for Single and Double Garage Door Pattern No. 86.	
Please send Simplified Directions for installing Single Double Gorage Door Hordware	
Name, a as ancias as assumed a control	_
Address	,-
City	m



IRWIN auger bits

World's finest wood-boring tools

Irwin Auger Bits make any boring job easier. They're precision made of special bit steel - heat-treated, tempered, hardened full length for longer life, Cutting heads stay sharp job after job. Original solid center design adds extra strength for steadier, cleaner, more accurate cuts. No binding, no clogging. Ask for Irwin at your independent hardware dealer — the auger bit that bores true ... clean through,

SKWIN 427 Solid Conter Auge 80 - since 1/4" to 11/2". Decbig cutter head. Open threat for quick this clearence. No binding, no chowed edges.

HEWITE All-Purpose Exp Min — two types, small large stoom, Berlag range % to 3". Accurate, easily ad-lested. Two cuttors with each hit, individually packaged.

HEW'th Bit Sale — in herdwood ben er piastic rolls, é, 10 er 13 bil menetmunte, Since 1/4" 1". Ideal gift for heady-





tells, New to Select, Use, Cure for Augar Blie, Send name and address to Skwin, Dapt, 17, Wilmington, Ohie.

the original solid conter auger bit screw drivers scraw driver bits

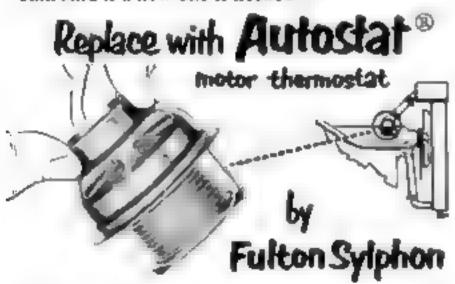


This WINTER

CHECK YOUR MOTOR THERMOSTAT

A heater that fails to keep your car comfortably warm is often the result of a dirty, damaged or over-age thermostat that prevents the engine from warming up properly. A faulty thermostat can also cause the engine to over-heat and boil away anti-freeze. In either case, the result is a costly waste of gas and oil.

You can easily remedy this wasteful condition. Get your service man to check the motor thermosust. And if a new one is needed —



You get faster starts and faster warm-ups with Autostat... more miles per gallon, more comfort per mile. You save oil and reduce maintenance costs. Types and sizes available to fit every make and model; quality-made by the pioneer builder of cat thermostats.

Robertshaw-Fulton

FULTON SYLPHON DIVISION, KNOXVILLE, TENN, BRIDGEPORT THERMOSTAT DIVISION, BRIDGEPORT, CONN.

*75 A DAY CLEAR PROFIT in your back yard or basement!

MAKÉ CONCRETE BLOCKS With Amozing New LOW PRICED GENERAL BLOCK MACHINE

Profits Within Your Reach You don't need much cash to cash in on the building beem! New high speed, few cost Ceneral Greek Marchine produces up to 1 000 concrete blacks a day for homes factories, buildings, garages Your profit mark up in 100% to 150% i foot proof castly operated, study steel marking the superior 3-teel blocks meet all building code requirements for foundation, chambey, corner, said and many other types of blocks Works building a new out Sand coment and water avail able anywhere. Simple

indears or out Sand coment and water avail, able anywhere! Simple operating instructions and mining formulae for coment and cluder blocks dupplied FREE Got full details, no obligation!

EXTRAI

Amazing litustrated book plans for 6 sensutional congrete block, hungalows. Tolls how in tay blocks, iny out building lanes, unit contrate build steps, porch and contrate fluses all affects anvings, Written by expects Con save many limes the cost of the machine Oct it new pay strings attached



GENERAL ENGINES COMPANY

Dapt. 5-113, 307 HUNTER STREET, GLOUCESTER, N. J.



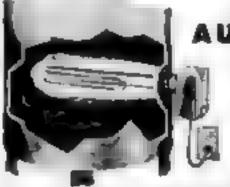
Mr. C. E. Hardy of Missouri says, "I am doing a fine business with the Universal Grinder. One Customer senus another, I spent 40c for a newspaper all and have done nearly

\$500 worth of business." G.E. of Ark, says, "I have had my Universal Grander 2 months and made a net profit of \$227."

ONLY UNIVERSAL LAWN GRINDER

... can the inside face and edge of the stationary blade, as well as the reel blades, be ground to proper clearance ALL IN ONE SET-UP, without removing any blade from either hand or power mower Send Today for Free Details. COGERS MFS. CO. Dept. p. 113 LINDSEY, OHIO

New Low Cost Electric Water Heater Gives You



Complete—Ready to \$19.95

HOT WATER AUTOMATICALLY

No dirt grime soot flamp!
 SAFE! Every part UL approved!
 Instell to LO Micutes, or test!
 No new tanks at plumbing
 Works aptomatically, saves fuel!

Works externatically, saves fued New UL approved LECTROMATIC changes gas cost or of such ng water hence into modern 414 fell-CTIGHT until Turns on an quaters sy when needed, while off automatically when water is brailed to install simply shut off water, flexbuse plug from water table strew LECTROMATIC in a open ng

as shown; then PLC IN 110 volt outlet Uses 1250 water Plenty of hot water all day long I see only had be electricity for gas of hot water from 100 to 180 degrees. Only \$10.95 C O D plus his plant and check or money offers for \$10.95 now and we pass shipping attracted to 2500 W model \$21.05 Money back in ten days if not delighted. Full one year governices of the hote.

COLLOID EQUIPMENT Co. Inc.

Page, PS-11 19 Murray Street NEW YORK 7, M, Y.

STEMS UNCONDITIONALLY GUARANTE

AC-DC FLECTRIC GENERATOR

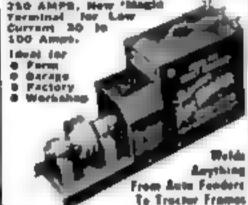
fault or rigid (S Sapsy A) Farre upon Sections Hased A C tjust [20] watte (Stavy Air aution) the votes the areas CFC output do array at 24 votts the & t Busice quarte for home rentire tights, part white extrictions and & t 1 therita material a critic motors. When driven by 1 H P provide explor makes a decay

plant The D PERM MUST 8 plant surport to emplator ing westing not marine use Hat learing constructions of inches

shaft Dimensions: Is an air the same as we get to be Cow't Acquait on at everthing a Cow't Acquait on at everthing a Cow't Acquait on at da Va qe F D B Thream

D.C. ARC WELDER

NEW MOOSE 353-BUAL HAMSE ITEM #45 For Stationary or Portable Use MEAVY DUTY MANGE to 710 AMPR, New Planger 31



- Blei Type Theoriet Control
 Bus 1/14" to 1/4" Hed
- · Concretor type Welder
- Reactor Carl for Smooth Even Acc.
- Une 71/2 H.P. Cluetere Motor or 10 M.P. Swielene Engine
- Run at 2500 R.P.M.
- · Available with Either Flut Belt or Double Y Pulley
- Complete Operating Instructions

Shipping weight sit? Pin this in his

119.50

EXTRA HEAVY DUTY DOUBLE ACTION HYDRAULIC CYLINDER

Hom #334 Sta" bore. 34" struke. who set #350 she with among his line hom pre-asse wa" tope thrond porta "" stressproof ground polluhed

senith closed on La steel well cylin elevis mounting at have and shaft Features Vie Hod construct on Huned harred Ohtp with Go F O E Chicago 39.60 39.60

PESCO GEAR TYPE HYDRAULIC PUMP

POWERPI L - RELEASEE



Kapertady designed for bet, drive from fan beit, pulsey take off take off three electric motor or small gas engine Equal y suitable for di fert coupling Pedestal type in surring with two oft he es for an' buid htandard NW OR holle

ITEM E 160 belvers 4.5 GPM at pipe thread inlot and outlet ports 10th) PSI of 28th RPS with 5 HP with actuals one (tem &6, 3" here 24" stroke cylinder in 10 seconds Hardened sterl gents turn to drove a its bronne bearings c peliwios Rotation | for my short Guaranteed trouble-free 22.50 FOR Chicago

TO PLACE PHONE DEDEES CALL WEBSTER 8-3793

TV S.P.

(G

MARY SIZES FROM 200 WATTE TO 25 KVA

Item # 183-3000 to 4000 Wett Concreter Set FEATURES Cover for your home or business

Simply connect to sower pulse? At house rires t & I estatus t diagram gard can of and, & Push to ten other of sing. A Push to ten other of sing. A Push to ten other or stop. APECIFICATIONS. Size 107 107 5 to the short means of bushing requires no ten diagram. With the diagram of the size of th he & Hermers Sett Le Ind guard me found generated the After Que or fivel starter penerated & Ho 215 will story of the product of the starter burntaken a flore single or breaking

totar furnishes a fler simple or lates phase power F or S u ce • Cancil ron saline start to lan I sin a cover signification of the cover start to lan I sin a cover signification of the cover significant of the cover significan 465.00

PALL SPECIALL

PORTABLE ELECTRIC LIGHT PLANT

-male ese telest appliances. The Wast 130 Nati Biologice A.I. Model Mo.35 3 made by Mideo Mill Lo. 3 cithides. 4 cycle by Mideo Mig to 3 citindes 4 cycle engine complete with number starting cops and of both six cleaner direct coupled to a 35t wall generated with voltage control rhete-tat and twin outlers Engine apend 18th H F M Shipping weight 114 Engine the FOB. Chile age.

2 TON, S-WHEEL MYDRAULIC LIFT TRAILERS

1982 POR Conveyor roung a Boot trailer a Lumber a Pipe a Pale trailer a Machinery trailer a Hydroulist dump for grain wagus a Coat truck a Life Truck a Var able height operaulic work taking Removable rack persons one hydroulist rife for other inetallations.

Determine Legisters of these Print ers are died the partent 7 hat tiden bydren is till a complete with hand complete Manual serve duen renken re b ennes pe Bad brutten had



Car the adjustable height tood park for boots dismore piper. By saiding wip ate you have a coopy adjust abite to be grant our on the hinds for gift 4.5. a protest angula that to the fraction of a perfect or finished in Street to descript wagrant Mount ward. to primers up a serie perturb by a backford of work height for most maps offs one; Lany tantals of the Provery of legals from scoping depotes is done by distributionity easing and overlap either and of band rock

BUTY HYDRAULIC and AIR EQUIPMENT

Large supply of new labor saving, occasionical hydraulis equip-ment in many types and sizes they these positive. highly mark in many types and sizes tree these positive, highly officient amough pressure hydroxyless on presses, arbors, lifts, frame alignment six ALL ITEMS BRAND NEW

SPEED REDUCER WITH FINGERTIP



USE FOR & RUSSON Brives Minigot Core & Food MINIS & Canning Machines Conveyors # Lethes ۰ Militing Machines & Motor Boots & Cream Sep-OUTSUIT OF STREET OF STREET Tractors 9 Pomps SMAP T Viscogli è sull'ent spet sin

from a to apput speed draughte to more or poster hadder for h fing handle mannards Car toomt power of 1 pt P. Tule West and the ach der Oil our Lais con of a car made a car so t hadren to believe

TEM = 3355

FTEND # 111 should displacement hydronic motors. Adjustably relief relief over it factory for 100 hash promote of decree may be exact up in 140 hash pention. Interpretable it reverse may be exact up in 140 hash pention. Interpretable it reverse control niterus full interpretable in relief at the pention of relief and the exact of a distribution of relief to anomaly clock in a fact that the exact interpretable for the compact clock in a fact that the exact interpretable in the first of the exact interpretable in the first of the fact in the

them 2426 Course action hydrostic cylinder to 12 prode I we either fast or clevin a Well lift 660 the oring 1000 p. 8.1 18.00

FREE PAGES, thurs for a finance passed War Supplies Frenchment Sargains for faces, home for tary part workshop Free? Item is moved from a granufeed You save as every bong Very a poly).

D. C. GENERATORS

Type H 1, rated 300 Amps 3d velus. Mrd by



tree #90 Type P-1 rated 200 tmps 26 Ve to 2500 BPM MM ty General Division Ford Description of the con-termy and Westinghouse Court Ary (see \$1.4) (8) Sheg wi 55 the Dimensions 13"19" 22.50

NEW AIR FORCE SURPLUS-SHATTERPROOF AIR TANK

"so for air comanta (i) ! | Page # 248 tachs Hepatel no Phon #268
to nors Augto bears 24 bear of di-gray ex-by pipe through most Williams at 10 ties 2.50 2.50 to the Territor

CONTINENTAL "RED STAL" 17 H.P. ENGINE

100m at 7 Figure for one monero en idea ne un monero pendente ne un primire apporatora nesperante a la cara martine and monero estado de la cara de la caracteria del la caracteria de la caracteria del la caracteria de la caracteria del la caracteria de la caracteria del la caracteria del la caracteria del la caracteria del la caracteria de la caracteria del la c AAT single ribonier d a r wath AI genr reducer As turb HUM engage equival about turns at his bifth furn of all houser marker marker rape, of bath his r conce, a or high an and

a strant & open of \$11 or \$1 \$4.50 by bring in a light \$45 per lines of their aprilla-tive beat in man way were. TRACTIFIE A \$14.00 value Onter non Lines of duantifies, T D h Charage



47.50

ITEM # LZG-POUR-WAY

OPEN CENTER CONTROL VALVE with hall is adjustable to left unive his loty set at limit P 5 1 spring load ed control position for any with one position netting by twice in neutral par asterio un linder to turbid and a more on tended but r between planter type

appendix (majaban), destaoperation, too be used so single until or recented in sector of any combinations occurred blas to" refer throad infet and matter to rise thread rythoder ports Nemir manufactured in sur specifications. Bliss will at, by An entstanding buyl FOR Chicara

PERM

21.50

Brand new-DOUBLE ACTION MYDRAULIC CYLINDER



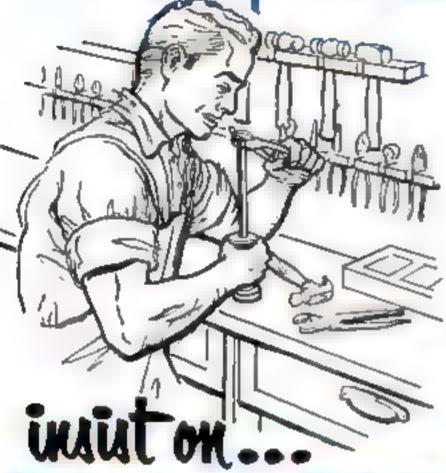
of rate ar 3 8 St 2 197 horse and FFEM by character store column and Lift capus, a communication store that the store th (aftempte (t)) Direct Remo Manufactured by Maria M Clevia es for a Br

16.00 17.00

rembles offert on joyett et ut pe to ORDER DIRECT FROM AD SEND PAYMENT OR PURCHASE GROER TODAY - SATISSACTION QUARANTEED

1139 SO. WABASH AYE., CHICAGO 5, ILL. DEPT. PS-11 CO.

The most versatile tools on your bench







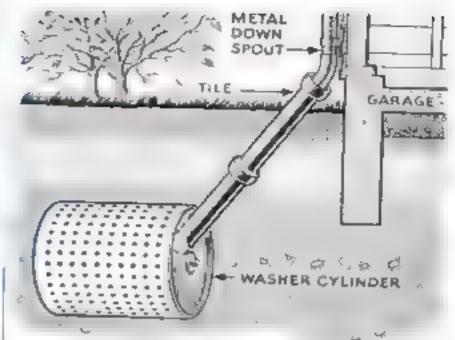
here's wky

Look for the Channellock line when you're shopping for hand tools. Channellock pliers offer features that you can't get with other makes. And when you buy a Channellock plier, ask to see the full fine—you'll find a style and model to do any job better.



THE PLIER DESIGN THAT ORSOLETES ALL CINETE

CHAMPION BEARMENT FOOL CO. . . MEADVELL PA.



Washer Drum Makes Dry Well

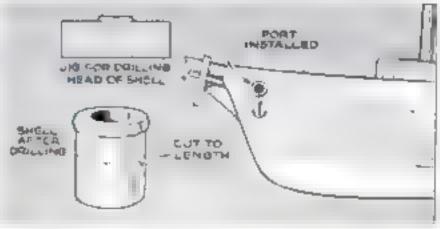
THE clothes tumbler from an old cylindertype washing machine can serve as a dry well. Close the end with nonrusting metal and bury it below the frost line.

Cutting Makes Keys Compact

IF YOU carry a number of keys you can make them less bulky and weighty by drilling new holes through them just above the stops and cutting away excess metal. Fasten them together with a flat-headed bolt and nut, tighten till they turn stiffly, and then rivet.—Will Thomas, Buffalo.



Cartridge Trims Ship Model



Polished metal fittings help dress up a model steam or sailboat. If you want a neat anchor port for a ship model, use an empty rifle shell. You can make a drilling jig for the shell from any small block of wood. Drill a centered hole through the head and saw the casing off short. To mount the port, bore a suitable hole in the bow of the ship and press or cement the shell in place.





Get better engine performance smoother idling, faster pick-up, greater gasoline economy. Eliminate engine stalling, bucking, and fuel waste caused by a dirty gummed-up carburetor.

Keep your carburetor clean all the time. Do it yourself with GUMOUT and KIT-sold by leading auto supply stores, service stations, car dealers. GUMOUT refills always available from your dealer.

If your local dealer can't supply you, order direct. \$3.95 postpaid.

- OHY DIV - ON

PENNSYLVANIA REFINING COMPANY 2690 LISBON ROAD, CLEVELAND 4. OHIO





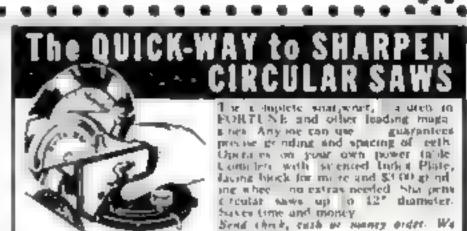
1256" x 6" capacity + Power foods of 20 to mosts - Provides for Granting Knows in the

Citterhand - Attachments for Inveting, Exhibiting, Temp Grance. Markshary Concert has mad rough homber into high priced cabinet Interest stock - Easy to make from my and popular patherns. Soud today for Iron Istoretons and pricing, waw Machinery Co. 1023 Field Bidg Menses City It. Mc

Science Speeds Shaving With "Canned Lather"!

That's right! They've invented a gadget that makes your shaving mug obsolete! Now you can get rich, creamy lather right out of a can. No brush, no greasy cream. Just push valve-out comes lather! New AERO SHAVE contains 3 beard softeners, wilts toughest whiskers in hard or soft water. And built-in Lano-Lotion soothes your skin. Handy metal container has turret top, won't leak when you travel. Get an ABRO SHAVE Lather Bomb. Only 59¢.





\$16.50 Pesiperial

QUICK-WAY Saw Company

Corning, N.Y.





make your *HANDS* MORE CREATIVE with X-acto Knives and Tools

Creative hands can be your greatest asset. ... X-acto knives and took help the intelligent coordination of active minds and agile fingers...they can develop skill and dexterity in any art or handicraft you select.



Whether It's boot whittiling, model airplenes, wood-curving, leathercraft, model reliroads or any other handscraft, you can make your hands more creative with "designed-for-the-job" precision-engineered X-acta knives, tools and handicraft kits.

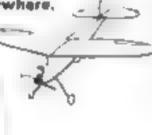


X-acto affers the complete line of handlcraft knives, interchangeable blades, tools and attractive kits.



from 25 c to \$30,—at dealers everywhere.





No 87 X-ACTO KNIFE CHEST \$4,20



Send 20c to cover pestage for our new illustrated 28-page Catalog.



X-acta Croscent Products Co., Inc. 446 Fourth Avenue, New York 16, New York



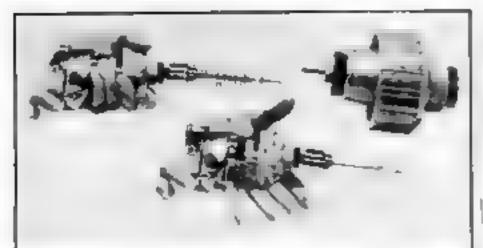






On furniture, woodwork, or panelled walts Satinlac works like magic to bring out and preserve the natural grain and color Easy to brush or spray

Were for feeded PIS - BRITED STATES PLYWOOD CORP., NEW YORK 3B. N. Y.



Babco 5-to-1 Speed Reducer Fits 1/4" Drills

Convert your 1/4" electric drill to electric screwdriver -drill holes to 11/4" in wood, 1/2" in mosonry. Planetory gear system gives tremendous forque increase. Adopters furnished to use 14" or 22" chuck Instant storting, stopping with hand clutch control To operate tool grip reducer, release to stop. \$9.95 ppd.



Bobco Right Angle Drive for 1/4" Drills

Close coupled, fits on drill spindle. Remove chuck, attach to angle drive. Twice drill speed for sanding or half for polishing. Easy to drill in close spaces. \$4.95 ppd. Heavy-duty angle drive for $V_2^{\prime\prime\prime}$ elec. drills \$19.95 ppd, At hdw. stores and tool dealers or from Babcock Mfg. Co., 6259 Clarement Ave., Oakland 18, California



WELLWORTH Compressor Outfit FOR WORKSHOP AND FARM



- 4

E . Park with differential 11 1 812 45 WELLWORTH COMPRESSOR SPECIALS Model W7

Medal E00 As in precise so 1 2" 2 h dr uc t I owth abp tel or

Model W3 hap more ar-\$29.95 120.50

If a wide mine \$150 \$59.95 Ship wt 45 lbs.

Ein wo att stop the wall be WRITE FOR FREE CATALOG

DEPT. PS11

CHICAGO 16.

SAVE

MONEY WORK TIME

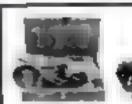
MILLERS FALLS

No. \$14 19.85

Millors Fulfs Procision Chuck

As shown with Jacobs Geored Key Chuck - \$22.35 Riggest Volce in 1/4" Drills

The last word in modern design—a rugged fistful of power that drille up to 14" In steel — to 1" in wood with the new power bits. Also operates many time and work saving occessor es.







Right-Angle Drive



Sending AHachment



For men who want full 1/2" drilling copecity in steel. A real husky-yet it weight only 8 lbs Ideal for the home shop, for form use, for repair and service men.



Goored Key Chuck Your Best Buy in Portable Saws

with Jacobs

Compact, safe, easy to use - this o" heavy-duty saw will handle 90% of all sawing jobs, Maximum cut: 1%". Adjustable for depth and ongle. Full 1/2 h.p. Weight only 101/2 lbs.



No 700 7" Saw with capacity of 236"-\$67.95

Most Versatile Tool You Can Own

it buffs, sands, grinds, polishes, waxes, wire brushes, drills, mixes paints. And, It's the only tool of its kind that's made for doing both retary disc and fine-finish orbital sanding.



ped, 4" lemb's weel bonnet, three 6" sanding

\$37.50

discs

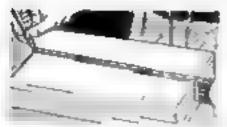
Send for Free Booket MILLERS FALLS COMPANY GREENFIELD, MASSACHUSETTS

ONLY the [STANLEY]

X226

Extension Rule gives you...





Sary marking gauge in even lengths. Square ends guide rule.



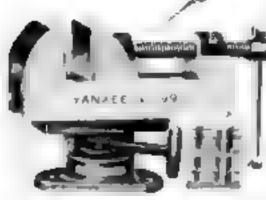
Conventional and centered inside measurement reading . . . using bross slide,

Opening in even 1/2 feet sticks . . , and to and in moti-used lengths, 12", 18", 24"

Green and features - 4-times tougher plastic finish, nickel silver positive-lock joints, easy-reading big black numbers, extra-thick rock maple sticks.



"YANKEE" TOOLS



STANLEY TOOLS New Britain, Connecticut THE TOOL BOX OF THE WORLD



"Yeakee" Pesh Drill No. 41 - "100 Plot" - Bore small holes in wood or plastics with one hand. & drill points [1 14" - 1" un"] In handle. Durable, All metal, Chromium plated,

"Yenkee" No. 1993 Vise -Accurately machined, conversions. Used with swivel base on bench for hand work, quickly removed from base for machine work Four jaw widths: 155 , 27, 2% and 4",

Indispensable for hobbyst, handyman, home owner-"How To Work With Tools and Wood". 192 pages, more than 150 illustrations and foots, Cross-indexed. Only \$2.00 ppd.



1	
Į	STANLEY TOOLS, 4113 Elm St., New Britain, Conn
ļ	(in Conodo: Send to Storier Tool Co. of Conodo, Ltd., 4113 Storier St., Roston Fond, Quebac.) Please send me:
	"How to Work with Tools FREE Stanley Rule Folder No. T-142 and Wood" (T-135).) FREE "Yankee" Tool Book No. Y-14
i	None
Ì	Address
L	AND THE RESIDENCE OF THE PROPERTY OF THE PARTY OF THE PAR





AMAZING, PERMANENT MAGNETS-WILL NOT WEAKENI NON-ELECTRIC or subsective to the state of t No a complete of the complete

MIAMI MAGNET COMPANY, 3240 M.W. 27th Ave., Miami dl. Fie,

Wild And a some of



it has then e Secto O to \$20 Reverse Automatic Overload Protection; Adjustable Torace up to 180 neb patients 44" Input and to put white a 14 and to 14 to 17 a 2 m M or Co-min source 7 by anny 7" high 51 by a de 5 to 1 (15 to 18 m) and 5 to 1 (15 to 18 m).

Feb. Chicage

DIRECUS MACHINE SHOP "T" 1423-25 STed Ave., Clears 50, III,

a 10 % eleparate



Gifts he will use



THE HEAD CAN'T FLY OFF. No more bother with loose or splintered handles. Estwing "Unbreakable" tools are forged in one-piece from tough tool steel. Grip is genuine leather, most comfortable and durable. Individually packed in colorful gift boxes. Axe \$4.50, hammer \$3.65. At all leading hardware stores. Write for FREE catalog.

ESTWING MFG. CO., Dopt. M., Rockford, Illinois



WIZARD **** WOOD



Tames that "wild grain" on fir plywood. Virtually prevents grain raise or checking,



Do the job easily, quickly at low cost with

UPSON PANELS

or CEILING TILE

For Cracked Ceilings:
No meesy replastering! No ordeal of housedeaning! Apply Upsen Kuver - Krek Penels on furring strips right over old plaster. Unique floating fasteners eliminate face nailing. Waterproofed and washable, Upsen Cailing Tiles are 12-in, eq., applied with matching color pins! Both give you a beautiful new crackproof calling in a matter of hours!

For Modernization:

All Weether Feeds — 6 ply, luminated, waterproofed. Strong, perfect for exterior eiding and sharthing. 7 cines. Strong-Bitt Fends—beautiful pebbled surface. Easy to point or paper. Up to full wall sizes. Upon Papels our like wood. Take acrews, mails, flatures. Impact resistant. High insulation value. See your lumber dealer or send coupon now.

THE UPSON COMPANY

I enclose 10c for 32 page Idea. Booklet, Include Instruction Sheet for applying Upson Ceilings and working drawings for Storage Wall FREE.

Home.	 _
Street	 _
Cry	 _



June Floring Factories



Claset ander stairy



Besellity year Stopleto



Extra chapt by budrays



Your over her



Chitd's drawing desk is nee of 10 projects. shows before

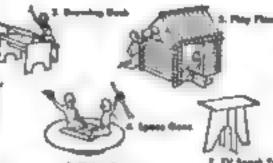
You'll have a lot of fun and satisfaction in the process. Whether it's a doll house for your daughter . . . new kitchen cabinets for the wife . . . or life-size Christmas cut-outs-you'll do a better job, faster . . . with light, strong, good-looking fir plywood.

ASK FOR DFPA-INSPECTED FIR PLYWOOD

Boyt, C. Tacoma, War (Offer moust be 16. S. A. O









Cut Perfect Grooves On Your Saw With

Warren DADO SAWING WASHERS

Not One—Not 12 But 40 Different Cuts

Warren Washers engineered to cut clean, accurate, parallel grouves with your present power saw 40 macromatic admitnates vibration leave on saw for streight cuts. No burning or chewing Over 250,000 satisfied users. Let genuine Worren Washers they re GUARANTEED!

Arbor sizes 1/2", 1/4", 1/2", 1/2", See your dealer or write direct.

Send for Free Bookist **WARREN WASHERS CO.**

ONLY S

BEPT. SI, BOX 98, MURTH END STATION

BETROIT, MICH.

Opens the door to extre profits A power driven liter that takes the work out of som fising Anyone con operate II. Gives full central to the operator Prized Right. Wells for literature leday?

BaMeCo Automatic Saw Set-

Uniformly sets 400 teath per minute on hand or band saws. Perfect hammer and anvit action. Acclaimed by saw shops across the country



800 SO 1515 AVENUE

INGLEWOOD, CALIF.

MAKE S100 A WEEK-

Assemble & Install Buckeye Screen & Giass Combination STORM WINDOWS

- Shipped Knacked-Dawa, Thousands Sald.
- Redweed or Aluminum.

• Finest Quality

Class & Scenaa Panels Interchangeable Summer or Winler

Make up to \$10.00 on hour SPARE TIME, assembling Buckeye Storm Windows, Self year round-no slock period, Quick, easy to assemble. A sound, legitimate business, You Nik nathing; no tools to buy; no big stock needed. We're 20 year-old company, A-1 financially

Some Attractive



Top Pay Goly 50.65

TODATE

For Redwood Sterm Window to fit 2815* 1 8 5 window (serven & grunn not inclinitely

FNA FINANCING THROUGH YOUR BANK Proofer Territories

| State |

SCREEN & WEATHERSTRIP 22nd Street, Columbus, Ohio

288 POPULAR SCIENCE

QUICKLY . EASILY



brance old finish, was and dirt with p lied Dovel Sanding Machine. Tim can reed and very inexpensively from your local

Then brook on orther floor such variety or shalles to provide a hard amounts have for the war and to bring and the beauty of the speed grant,

Then the Red Seril FP: 53 Floor Confitments in put to mork. With the waxing preping a smooth, even cost of posts nex it had to the floor.

With the building pade in place the B Specia FF 33 entity completes the job by painting the floor to a girsty

Easy as this, if you have the right tools and know how to use them.

your...

Marthury or Paris Disper can take care of both these mode! Get fell doleads by gottong your FREE copy of Bad Dovel's: "How to Manutam Mond Finers' from your duoter or most the compact boday

freezier - yes met fat feril luit - the lant grefermants mit.



Plassa soul up "How To Maintain Wood Floors"

2011 @

LEJAY-FARM-HOME WORKSHOP-HOBBY EQUIPMENT !!

HYDRAULIC SPECIALS



No. 6-DOUBLE ACTION CYLIN-OER 1' bors 26' stroke 1' shelt Li't ng capacity 1.60 lbs with 1000 P.S.I. Input. Overal, length 35' Bolt mount at bot-tom cover at top. \$15.95

No. 7-DOUBLE ACTION CYLIN.
DER 2 : bore 7 stroke 3, shaft. Lifting capacity 4500 ibs with 1000 PSI apput Overal, length 16 Standard feet mount for with threaded \$14.15 shaft. \$30 00 vs us \$14.15



No. HP4—Hand Pump with bondle Burt in theck valve capacity 2000 the Pressure capacity 355 00 \$11.25 Value.



No. 211-Pesco Type sums for on, water, air 1' pipe thread ports Spitaed self BARRIE A



No. NB4—Double Drum Winch, Includes 2 sepa-rate 1 top holsts driven by own 24 volt DC mo-Operated together tor, handles loads up to 2 tons. Comes furnished with 60 ft. furnlabed 3/16 in

stool onbie. Govt. \$59.95 surplus like new.

WELDER-our FINEST and BEST

Complete Kit form, \$89.90 Early assembled



Concerns POWERFUL 300-400 ampure mircraft penerator Original cost over \$300.00 the base Ready or assembly \$89.90 base Ready for assembly

No. 3M4—Sheet Metal Mayter made spe cial by Levis is a resistance control de signed and built for weiders using air craft generators. It converts these weld ers from 75 amp minimum to 50 amp. min mum to make easy weld- \$10.95

ing on thin materials. No. RV1-Surptus Line Valve 1, Standard Standard pipe thread valve. This s a Govt surp us valve. Rust proof constructed to rigid govi specifications Can be used in water ones air line of tanks, gaspline tanks or any place that requires a valve. Original cost much more A

LEJAY'S TREASURE CHEST



No. 44TC. Lojay's Treasure Chest for unperimenters. Truty a treasure chest packed full of useful Heme for experience research and fun. Look what you get Henry terminal hock 24V reiny at heavy contacts of fine a liver Fuse bock with citys Terminals and mounting bre ket Noise filter 30 v turboh Pile Variable resistor, plus assortment of patted nate bolts, across citys, spring snap locks. Its the lat \$1.98

No. 163 Powerful Hand Lantern. Navy ested Sturdy case. Throws powerful beam Moisture proof Use in snow and toin Handy carrying hapite Fine for around home, barnyards, boats hunting etc. Surp. 13 Good ron in 0 \$2.99 worth many times to re On 1 \$2.99

reach Yourself Books. Land by Cov't. to teach trades to as vice man Each book sutbenties and complete. Approved by an Each training for home study aboutstand sold to our test with 99c Warth much more Surp as price 99c

OMDER BY MORRER	
Electricity for Baginners	AH #
Machine Tool Operat as	Decks
Base Malhematies Vol No 1	for
Basis Mathematics Val No 2	5 99
Small business	ppd.
Mathematics relative to Electricity	

ORDER FROM THIS AD. WE SHIP C.O.D.

Send theck money order or cash today—Money back guarantee

buy at . . .

LEJAY MANUFACTURING CO., INC.

FREE CATALOG Real huys on form and workshop equipment. Write today for your own copy,

CHISEL AND PUNCH



QUICKLY AND EASILY



TODLS.



Y is through the toughest
to the when you
to the trunch Made from
to the Shach Made from
to

Send 10: today for PEE's complete selects All ords on total 200 tools. P & C HAND FORGED Y O U ... C O M PANY Dept F-1153, Bex 5924 Periland 22, Oregon



DELIVERY

Maple, mokegany, red codar, eak, cherry, poplar, waiset, and many ethers --all properly seasoned...and ...kiln dried.

OHLY

Like thousands of woodworkers all over the U.S.A.-you'll get what you want and save money, too-with this famous book. Filled

with everything you need.

Shows 22 care and fancy woods in color...275 scroll patterns... multicolor inteys, averlays, bandlags...bardware tools...and..pages of information, tips, ideas. Send for your capy—right new Only 154-refundable on first order.

CRAFTSMAN	WOOD S	SERVICE (CO.
29 S. Mary St.	Dont. 0.11	Chicago	. 10 11

Send me the big, new, money-saving Catalog No. 20. Enclosed is 154--refundable on my first order

EUCIDENG ST (35Letraodole on my titt artes
Name	- 4004 1004000 10000000
Address	· · · · · · · · · · · · · · · · · · ·

282 POPULAR SCIENCE

City

NEW SPEED FOR YOU WHATEVER YOU GLUE!

IT GRABS FAST -- BUT FASTI



Handy Plastic Wonder Gun You Con Refell

In 20 to 30 minutes you can send,
saw, trim or work
the wood. Saves
you 6 hours working time per job.
Handy, unbreakable gun. Carry
in kit or apron
pocket. Can't
spill. Can't dry
out. Invisible glue
line. Wipes clean.
No odor. Ideal for

О

bookbinding, mending, too. Refill from large economy size Wilhold Glue—at your dealer or write today for 6 oz. shop size Glu-Bird, only \$1.25 postpaid, Enclose check or M.O. (C.O.D. extra), Money back guarantee.

WILHOLD GLUE CO.
Los Angelos 31, Colif. • Chicago 6, (II.



OIL USAGE CUT 33% with Miracle Power



Many lubrication "aids" claim to help engines. Here's proof that Miracle Power improves lubrication. Wetmore Hodges & Associates, independent research laboratory, can a comparative road test of two truck engines under identical commercial hauling conditions.

Results: After 33,703 miles, the Miracle Power engine was using 33% less oil, had 13% greater compression, 50% more spark plug life, 49% less cylinder wear, 15% less ring wear.

Why? Because Miracle Power is a blend of super lubricating agents including colloidal synthetic graphite in suspension. Used in gas and oil, Miracle Power clings to metal, holds oil longer, lubricates even when oil is temporarily absent (such as right after starting) or burns off due to excess engine temperatures.

Insist on Miracle Power in gas and oil-remember it's

proven results.

Stops DRY STARTING Damage . . . Treats the Engine, Not the Oill



METAL ABSORBS MIRACLE POWER AS BREAD ABSORBS BUTTER-Miracle Power fills microscopic valleys in metal with a breathlike graphoid film. This film holds oil preventing Dry Starting damage (metal to metal contact during the up to five minutes it takes to pump oil to vital parts after starting). It also lubricates when the oil film breaks or burns off.

THE AP PARTS CORPORATION Miraula Power Division 613 AP Suilding . Tolede I. Oble Manufacturers of:

MUFFLERS • PIPES • MIRACLE POWER • dol 123



Get Miracle Power (money back guarantee) at gas stations, garages and Ford, Kaiser-Frazer, Willys and other car dealers - 75c (\$1.00 in Canada)



C) The AP Forts Corp., 1963

CHAMPIONS

CHOICE of the EXPERTS

for

Dependability, Performance and Long Life

> INSIST ON CHAMPIONS FOR YOUR CAR!



SHARPEN ALL YOUR SAWS AND SAVE!



SENSATIONAL NEW SUPER FILER points as band and circular saws 6" to 10" with all feeth the correct beight, depth, pitch and bevel. Easy in use-when the file lots hardened sleet roller, feeth are finished. Sew runs true and smooth with no side pull. Complete with special A" (The \$01.95 page). GREATANTTEED

Children (C Pol R) ically sets teeth at 10 or more \$2.95 ppd.



the new with this necsalipsel filling fig and identer \$2.95 ppd.

used as

JOHN TEN

6. F. McBURHEY - 5900 Hellywood Ohrd., Bellywood 20, Calif., Best. 5-35

BANDSAW

Exclusive GIL-BILT Build-It-Yourself Features

A series of the temporal authorized pair
 Series to the temporal property of the series of t

Proved performance Nationally advertised and anid for 6 years



GIL-BILT 10-INCH TILTING ARBOR SAW

 25 on to de de de empose; in ope of tempe
 0 of tempe
 0 of tempe
 0 of those on a 26; in deep, lifts • Proce mare 21" high, table always

to the war by the limit of the second the second the second to the secon an Falor darke

• Catal more not be the games and are all any right

to the control of the (A, mar. - Os. mittage p. with with B continue on Boole \$25 BU



Denote the first of the first o to the tree year of years of year of the liter and the the den to partition e at er or and the effection of the or or the first of

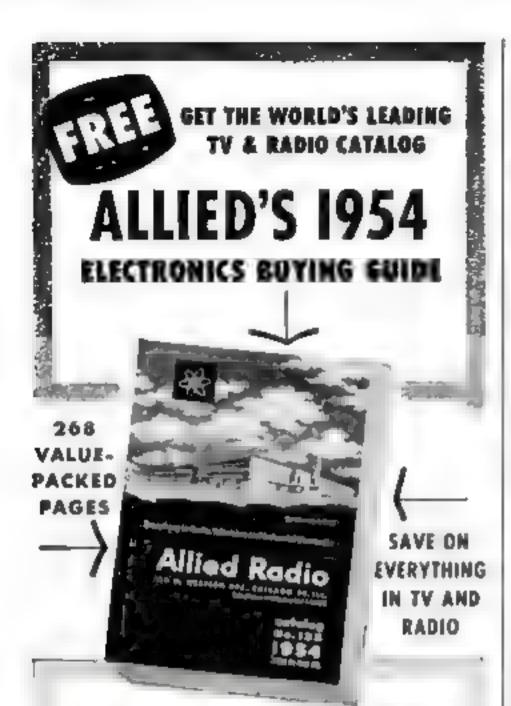
and end oregans due waren d Lardy time built through IN ly machined ready-

at the property of a literature of the state.

It may then be a making of the property forms of the property o no post of report GHE BRIT ST to despend a second of held ser programme ing a my all points.

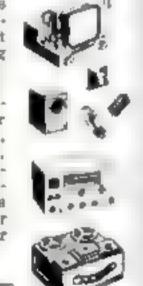
For shapen as up a Sie in team and its other 600 and. Berg latter Plans and Party Ret for \$6" Band Saw, Bett Sender Also available and . Till Table Saw Order Plant at \$1.00 rath—Sent postpaid anywhere in the world or write for FREE descriptive catalog. P. O Bot 1 VL Lamb GILLIOM POWER TOOLS

NOVEMBER 1953 783



Everything for Experimenters, Builders, Amateurs, Servicemen, Engineers and Soundmen...

Get Attieb's big 268-page Catalog featuring the world's largest selections of latest topquality electronic equipment at lowest money saving prices bee the new stain custom TV chassis TV accisso-ries, FM and AM radios High-Fidelity sound, Amateur equipment P A systems, recorders test instruments, baildera sota industriai clictranic supplies plus thousands of parts, tubes, tools and books. Get more for your money—gend today for your PREE 1954 ALLIED Catalog'



SEND FOR



NEW HOME OF ALUED RADIO

eltra-madera facilities TO SERVE TOU BEST

	_	-	
ALLI	_		
	-		
	_		

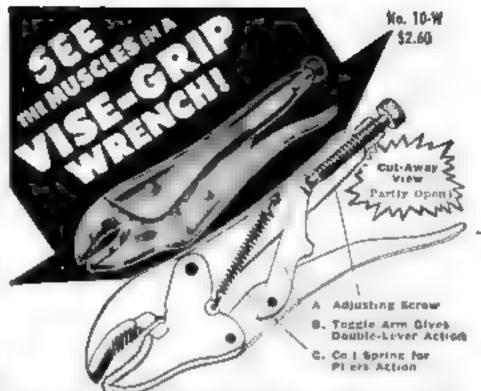
Attied RADIO CORP., Dept. 7-tt-3

100 N. Western Ave., Chicage 80, Illinois

Rush Fran 1954 Allern 268-Page Catalog

Name		
4.14		

N. Della Cha			_
Class	7	Deser	



Double-Lever Action Locks Jows with TON-GRIP Look INSIDE the most useful tool in the world! Only Double-Lever action could provide Ten-Grip. See how a squeeze of the hand locks Jaws to work! Won't s.ip. Can hold, twist, bend, pull. ratchet, cut! How you it USE it. 7" and 10" only \$1.85 to \$2.60. At your hardware dealer Alaunfactured Only By

PETERSEN MFG. CO., Dept. P-11, DeWitt, Nebr.

TO LOCATE THE WOOD STUDS IN YOUR WALL

USE A DOWSER*

When hanging micrors, pictures, shelves.

\$2.00 Ppd. Money-back guarantee.

Complete Instructions—No C D.D a
The Rell of the Bell Finds the Sted in the Well

You May Mosd One Tomorrow!

FORD PRODUCTS, Dept. R-2, Port Chester, N. Y.

Send 🚟 Giant Automotive Catalog



1953 EDITION JUST OUT!

World's largest Auto Accessory & Parts Cots.og Over 50 000 fems - Hollywood Accessories III Speed Equipment Bebuilt Engines Everything for a licera & trucks. Where that Hard To Get part Jam packed with bargains Completes I estrated. (173) there. Send 25c. Relandable.

J. C. WHITNEY & CO., 1917 TT Archor Ave.

TOOLS AT WHOLESALE

PROFESSIONAL MECHANICS HAND TOOLS

TOP OVALITY, FACTORY GUARANTEED

Deat W

Write Today for FREE CATALOG

MECHANICS TOOLS CO.

Ooklond B Colif

WELD BRAZE

SOLDER CUT

Acciditional by the notice of Humenwhers, Manager and Hobbytels as the war of 1001 uses. Es he was a self-from property was also with a life-forgular of the larger on 10 day manage back guarantes.

FOUR-WAY WELDER CO., Dept. F3-M 2326 5. Michigan Ave. . Chicago 16, IR.



SAVE UP TO 90%



C. GENERATORS-\$14.95

The generators flated below will well to to by plate steel or better. They all one be used as a combination welder and

WL 53 (> A pirm Gort Cost \$150. \$24.95.
Electric Auto 1 to 140 AMPS 24 Volts, 2500 EPM Makes a dendy are welder Wt, 53 fbs. Approx Gort Cost \$450, man

All Jack & Heintz, Rated 300 Amps., 30 Volts, 1 Approx. Govt Cost \$450. Guaranteed perfect \$35. Wt. 40 lbs

MAKE YOUR OWN ARC WELDER Complete make up package consisting of one NEW Auto-Lite 140 AMP Generator ican be reved up to over 200 AMP), one giant torgie switch, one wo tage regulator and a wiring diagram chart showing conversion of Aircraft Fenerator to Are Welder Special OCE-TERN THEY BANK



AERO JET BUBBLE GOGGLES

Affords protection over sye glasses or can be worn as plain goggles. Improves vision. Scientifically blended for eye protection and comfort. Gives panoramic view for sitiing, farming, driving, boating, shop, fishing cycling, flying, golfing Colors: clearamber-green. STYRENE. \$2.75 ppd.

LOW VOLTAGE CIRCUIT TESTER

Made for U.S. Ordinance to vigid describention. Portable steel energing unit, self-contained trouble shooting device makes complete & rapid check of generator battery circuit inc. any circuit a voltage regulators. Battery voltage regulators, cultout actuings a generator performance statily determined. Any flor 12 volt system. Creat for garages, mechanics, truck dest owners, beat a marine mechanics. Every set checked nut to set in a perfect condition. Sapp. Wi 20 thm. Approx. GOVT COST \$275. WEW Complete with instruction book... \$36



SENSITIVE ALTIMETER In 10 H. Increments

0 to 05 000 ft. (inches of Mercury) Tested and impresed in our own instrument sab Guaranteed perfect Ready to Install \$18.00 ped.



MICROMETERS Chrome plated, premains engineered carefully spoint to give long life All new 0-1" cap. \$2.25 es. 1.2" cap. \$3.50

Sand 25¢ for his 1953 autolog. Surgains for exercises Check. Money Order or Cash. 3375 separation C D D orders Prices F O B. Culver City. Calif. Unless otherwise stated

IRBORNE SALES CO. INC., Dept. PS1153

Of the second The per week Amazon performance Surprising comdue, construct on, fired) to real or assemble it yourself the or to tetatifed out ofder) for artists assembly bush to in the Olivier with the second about the second with the second and a process at the milder motors will be a stream, out of the second at the milder motors will be a stream, out of the second at W. R. DE CALL





adhesive mekes you an expert Mr F uit Mends leather metal, wood, glass, rubber china, labric, plaster paper, plastic. Easy to use Makes strong permanent llexible bond that won't get brittle Water proof Resists oil, chemicals, etc. Bottle 25c. Handy tube 35c.

WT H Reg The Goodpoor T & H Co. W. J. RUSCOE CO., AKRON 13. OHIO

AT DIME AND HARDWARE STORES EVERYWARE



No. 150 SpordSauder (qiane)

\$3450

No. 158K SpeedSander cany and fast, in steel carrying case with attachments, accessories and stock

Professional type (motor-draven, orbital motion, all ball bearing) SpeedSander amooths rough walls, makes planterboard conta invasible. Sandsoff old finishes from woodwork or furniture, Smooths, cleans, buffs, rubs and polishes (wet or dry) to a plane finish -makes tedious work

of abrastive covers. \$4950 Speed Saw \$2995 Save half the cost, by fitting your own atorm

windows, building colonets, shelves and furniture -it a casy to saw strught, square and accurately with a SpeedSaw. 5" litade, 3500 HPM At -DC series wound motor. Cast aluminum body and self-closing binde guard Rip

fence and angle adjustment. geedlirill No. 200 14" SpeedDrift 814.50 No. 400 17 SpeedBeil 5JP.50 you can drill holes in wood, metal steel or concrete (as illustruted), Can build, install, anchor, repair most any-

or basement. The portable electric drill has become the basic tool of the modern home for it not only drills holes but with available attechments does a hundred everyday home jobs.

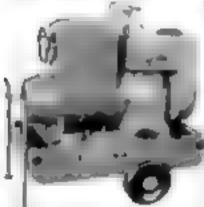


Complete with high speed 5 SpeedWay Drill grinding wheel, wire brush, cotton buff, backer plate, sbramve duce, and paint stirrer, thus useful kit costs only \$19.95

Write for Bulletin describing over 48 Speed Way gower tools and hits.

1865 So. 52nd Ave Cited 80 III





200 amp, portable Gas Drive Welder with aucoeled engine.

Welds Anywhere!

Would you like to OWN YOUR OWN BUSINESS one that pays big from the start has an unimited future—yet requires no special talent or big investment? If so, WELDING IS FOR YOU!

Just one low cost Hobart Welder puts you in business. It goes anywhere, hand as any job. Gives you better welds—dependable, low cost service. Has exclusive remote control and 1000 combinations of heat on all standard models to make learning and operation easy. Check coupon!

For even greater profits, you can "build your own" combination

can "build your own" combination welder-power plant and save hundreds of dollars over cost of complete factory-built model. All you need do is hook low cost Hobart Generator to a used auto engine Model illustrated gives your a

Model illustrated gives you a 300 amp. AC welder-plus plenty of AC power for operating lights, tools, etc. Check coupon today!



welder-power plant.

Hobart Electrodes
give smooth, tough
welds, easy and fast
...try them!

HOBART Trains You

Complete or partial courses. Best equipment and instructors.

Hobert Brothers Co., Box P-113, Tray, Oklo

Free!	HOBART BROTHERS Send complete deta Gas Drive Welde Generator Only Welding School NAME ADDRESS	His on thems ched	rked. Ive Wolders Gos Drive
	PATOL .		



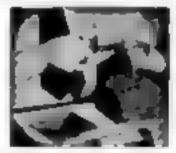


1017 N. Control Expressions, Online, Texas

ONE-MAN SAWMILL LOW 55000

able benefit to benefit and the second parts — makes to \$500 in they captain several for couplings, BELSAN leads a lefeture. He crow sound, Proop with tractor to orth stages, Beginners get excellent ranches, Sound today for FREE ROR, NOW TO MAKE LUMBER.

BELSAW MACHINERY CO



BRONZE FOUNDRY

Schools and Home Workshops Make your nwo castings of alundaum, copper broate, sover, housdry sets are available in three sizes (noted ag 24 Deg F blust harmaces, \$22.50. \$29.50. and \$12.00 f.o.b, Kansas City, Free Circular.

KANSAS CITY SPECIALTIES CO. P. O. Bex 6022, Dept. 9-11



of meet blades and pt \$12.95 tot first Postpaid, Daily \$12.95

IRWOOD, INC. 1774 W. Berteau Ave., Chicago 13, Ill.



Americo's First and Finest Reciprocal Action Saw

Precision Made for Precision Work Home craftsmen will find Whiz Saw useful for rough sulfing jobs as well or precision WORK ACCEPT NO SUBSTITUTE . . . the or ping, WHIZ SAW is one of the most versals a cutting tools ever invented. It cuts with amazing speed wood, bone, plastic Abre, pressed wood, hard subber, etc. up In 1" th changes . . It a scent ficulty designed for cutting inside shapes without first boring a starting hole. Ideal for his or band taw use when inserted in handy WHIZ SAW In Walk

Whis Saw #2 has greater capacity, cuts up le 2" th thness, \$130.00. While Saw, a Al/y" a reular blade, cuts up

to 11/4" th cknoss \$49 00 If not available at your dealers, write for The Fortberg Mfg. Co., Bridgepart, Conn. U S A | Intel Editor

7 awws in L CONSCRIPTION OF THE PARTY OF TH BOLE COPING STRULL GAME DE MA

the ideal cutture tool for: **HERRYISTS** ELECTRICIANS CARPENTERS **FINISHS** SIGH-MALERS MAINTFULNCE MEN



tile may be necessif with perwer to went booth et held in titt.



WHIZ SAW

\$5500

"I did it myself in an afternoon" Yes, you can insulate your home yourself and save \$50-\$100 installation costs. Zonolite vermiculite Insulating aidewall stude-flows anualy around pipes, wiring, braces, heat leaks-keeps winter ekmunates money-drainin IN . . . summer heat OUT! Saves up to 40% on feel. It's hreproof-snuffs out flame-termsteproof, rosproof, rodent-

proof-permanent, Mail coupon today for FREE BOOKLET! *(cost of insulating attic in average bome) _____

ZONOLITE COMPANY, Dept. PSM-113 133 S. LuSalle St., Chicago 3, Ill.

Contiemen Piesse send me, Irae-el-charge, booktell HI-20, "Your Home--- its Comfort and Protection."

Address

Pune?

State

SEE YOUR LUMBER OR BUILDING SUPPLY DEALER



YOUR BUSINESS

Start in Spare Time with a FOLEY SAW FILER

Here is a steady repeat CASH business you can start at home in your basement or garage, while you are working at your regular job. No experience is necessary to turn out perfect cutting sows —"the first saw I sharpened came out 100%. I think the Foley Saw Filer is a marrel of perfection," writes Clorence E. Parsans. Every saw you sharpen will bring you new customers. You will find you can make up to \$3 or \$4 on hour-\$20 to \$30 a week in your spare time as a starter. With a Foley Saw Filer you can file all hand saws, also band and cross-cut circular sows. It is easy to operate - simple adjustments - no eyestrain. Patented jointing principle event up all irregular tests and makes on old saw cut just like new.

This Free Book Shows How to Start

"MONEY MAKING FACTS"

thout you have to get plenty of sours to file without convencing, and how you ann develop tuto a general repair thop that will be your own hummen. This is a belefut, pract ent book that tuils juil what to do-sand for 11.00 00 E. today. No salesman will call.



Sand	(or	FRE	BOOK

FOLEY	MFG.	CO	1119-3	Foley	Bida.
MINDS	apolis.	18.	Miren.		

Send the free book "MONEY MAKING FACTS"



netmukert, Electe elang. Plumbern! Here for the firs have any where is a Porta e alt. SAW Attachment to fit any electric drift No need to put a mar, working hours to make fancy cars by hand ARCO JfG SAW & I higher ato proper from the amalicat to the arges. In mil is es you can can officiate passerus circles etc. Make furnishers, toys to all house telms to the operation for plumbing sweetherage without hering a starting hole. While they proposed we lighted plumbing the starting hole. While they proposed we lighted plumber of the starting of the shift and stream blows assemble as powerful versus a root that it light to be got now! Yet hore is a powerful versus a root that it light to be gift now! Warm Drive Clamp give you a Sibration free unit, Handes are



or Combing too or Rip or Consent Style BUY THE BEST wee your handware dealer now! Don't accept Interior guins tutes

with it the famous ARLO' features It not ask up a to 'ARCO' tools on our 10-DAY NO HISE QUARANTEE You must be completely sall DEALERS Wr e 01 Ished or e-ur money refunded. Send us check or M () (Postpaid) C D D a postage extra, stearest jo her

ARROW METAL PRODUCTS CO

DEFT PS 11 140 WEST BROADWAY, NEW YORK 11, N. T.



NEW, IMPROVED CALCULATOR FOR WOODWORKERS only 25c

Instantly gives information on lamber, nails, enourese mines, pointing materials, etc. Convenienc, simple to read. Just set dial for mail specifications, to convert linear to board feet, find but sizes for screws, compare characteristics of woods. 6' diaments beavily varnished cardboard. Send 25c so stange, please to Greenlee Tool Co., 2131 Columbia Avenue, Rackford, Huston.

MIDDLEMAN'S PROFITS ... boy DIRECT from CEN

LIGHT PLANTS

1000-1206 w AC, 115 v, 50 cm. Powered by regard 215 be easy-starting Continental gas eagine. We write, Just glug in, ready to go, Complete with 12 v starting winding. Easily connected for push-button battery starting. Fully connected for push-button battery starting. Fully custanteed, easily worth 1325. Your Factory Price only 5144 Other bargain price models an Mach. 300. ISSO, 2500. 5000 w, etc. 18ND FOR FREE WOOK.

FOR TOUR JOB.

BOOSTER FANS

Fit my 6" be 12" ference pipe. Mounting frame, ?" blade, 110v meter, 50 cyc 1510 rpm with 6 cord. Buent operation. Easy to install, Warm those rooms with long runs. List \$11 05. Our price . 56 95; two for \$11.98, three for \$14.85 Buy one for each room. REGISTER FAN for hot or cold air with bracket ready to mount motor. 7" brade, \$ cord OHLT . . . \$7 50; two for 512 95 three for 516 95

More than 4.00 h c \$25 basing buys. This are only a few of the many thems at tensationally two prices: Seed for FREE SE

page_catalog! Gas Engines Mari Grinder Air Compressor Della Trois Arr Tarib Drop Gords Moch and Tarble Electri. Hotels Blowers Electric Molors Senerators Pumpt Reduction Con-Gr opera Rubber Cable Rubber Wheels

Bouster

Down Trailer Duzz Baw Accessories Fans

SEND TODAY A CATALOG

Compressor Clutches Conveyors

10 (0)

to The Wagan Erectric Switches Hale Fire Pump Elevator Brawing Hand Truck Elevator Inclina Hydrau ic Fany, Exhaupt Cyvinder Head

Mydraphic Stacker I Beem Troitur Lawn Maner Sathy

Magnetic Starter Winch, Hand Mail Chain Saw

Wench, Ervetrig

Saw Tobies

heartern

Tonls.

Shower Sprays

Transformers

Whiting Holst Wilton View

Fire Extinguisher 4 Wheel Trailer

ELECTRIC MACHINE Co.

W. Josep Ave., Milwauken S, Wissensin

MACHINE SHOP EQUIPMENT

The NEW edit on of the famous Center Foot Co. Cathing to new ready! Every w rhahop owner should have a copy 24" pages full of Lituates. on descriptions and prices of the otest to be made by best known manufacturers in U.S. Y a par the cost of prin ng 4 of We refund your \$1.00 with your first accept of \$25.00 or more Promps delivery it most tools. Bend theck or money order today!

CENTER TOOL CO. 183 Centre St., Dept. O. New York 13

ARC WELDER

USE AIRCRAFT GENERATOR 75-300 AMPS, D.C.

WE BHOW YOU HOW PRAY IL IA to bond this Powerful Weider Gees most any surplus aircraft generator. Requires no rewarding or special changes. Do your own wedn's save many dol-lars Complete simple plans 35c Write for FREE War Burptus Cavalog

LEJAY MFG. CO. 1223 Leday Bidg., Minnespolls, Mign.



Drive Screws, Nuts, Bolts

10 TIMES FASTER

with DRIL-O-DRIVER



174

Picture shows greatest little invention ever designed to save time and work for carpencubinel makers home craftimen hobby all electricians plumbers farmers me-chanics everybody who uses tools. The new DRIL-O-DRIVER is an Electric Drill Attachment that can be used with any quarter Inch electric drift. It drives slotted and Phillips acrews buts and bods Operator controls speed and force of drive Designed to the durable useful long years of service Small cough to fit any kit Unconditions by guaranteed. If your dealer does not stock Dri.-O-Driver send \$8.95 today for your DRIL-O-DRIVER Screw Driver Bit and Drilo Magic Connector, an adapter enabling you to use 54 standard tools available to electric dri , owners. We pay pustage.

THE DRILO CORPORATION

202 E. Carson St.

Pittsburgh 19, Pa.

Buy the Best ... WISS!



WISS Metal Master Compound Action Snips

#M-3. Laurly cuts 18 gauge sheet metal. Cois curves and circles as well as straight. Idea: for the home workshop, \$4.25. Rubber gr os necummended, tor extra-

WISS Straight Cut Snips

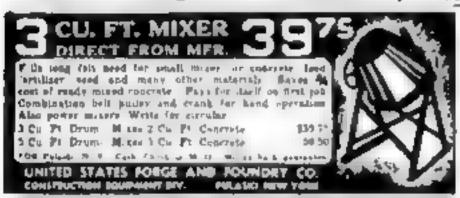
#9. Crucible steel inhald blades. The basic sorps for straight metal cutting Com metal handles Overail length 12-2

WISS Combination Spins

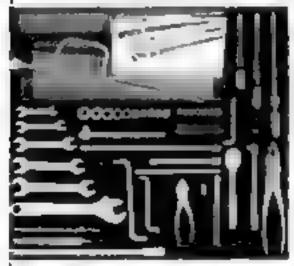
= V-13. Solid steel, with gray japanned handles. Cuts survey and irregular shapes with case Handy pocker size " long Accurately tempered jaws and strong bolts \$1.85



J. WISS & SONS CO.



Save 50% On 50 PIECE MECHANICS TOOL SET!



Fully Guaranteed Factory New Tools of or or or Pet of phest to ad-names the alloy steel lide wall so buts & tools in said of steel

PROTO - PLOME SAH . SNAP-ON

and other top brands the miles 3 drive and hipper drive which only subjets runne I fi specier univer rl)r open cool wreach set [a I secondrisers F F S' 6 ft misters e fape 10° tel

Value 357:50

there while activities at purpose and A nexts ruting saw with 2 rates blades 17 4 47 A metal futting and with 2 estro http://www.tr.d. 4" 6 4" cambo pliers and during steel him host Complete Set VI Mall Only Place Promptly MUNET BACK BUARANTED

CONSUMER'S HARDWARE CO. Bustington Park, California

No C U D ALSO AVAILABLE -- COMPLETE 1/4" DRIVE & 1/4" DRIVE SOCKET SETS of PLOME + SA + SMAP-ON & other top brands

18 of Set 3 Or (to 3) 1 of of value 20 Pc. Bet 42" Or (16" to 14 519 of paper 315.50 per

ANGLE VISE

Set up hard angle jobs in 5 seconds. Drill, grad, mill, found, square or imigular pieces quickly and accorately Save time money and errors. PALMGREN ANGLE VISE bus 200 Janes 1 Dam. I Grouved. Accurately machined and graduated. No. 000 only



ROTARY INDEX MILLING TABLE

Turn drill press into vertical miller. Mill, Grand, Index Rabbet, Mortise and Rout CREN "Hobb-E" ROTARY

TABLE is a precision ma chine, accurately graduated Bolts to table No. 63-8" Table 4" Cross Feeds, 360° Rotary

Swivel Base \$3.00

heed +1+1-11-00 No. 82-Without Rotary Fred



ADJUSTABLE ANGLE PLATE

Every Hobby at should have one for jobs difficult to hold in vise, No delay less apudage on consplanted angles in dolling, milling, granding or layout work, No 256 B has 6" x 6" surface plate 8 bolt slots, Adjustable to full 90" Accurate Base Only



BENCH DRILL

A fine "Hobb-E" tool, Base bolts to work bench for general work. Vise is dovetailed and removable for use an drill press by loosening thumb screw Last rotates 380° horezontally Adapter has steel ph which locks vise in posttum. No. 12 Removable laws 2's" wide \$1795 I Plain I Grooved. \$1795



ALL PURPOSE ALUM

This "Hobb-E" tool graps mail pieces for granding, buttorg and 101 other uses Sate-guards hands and fingers. Small parts easier and faster to handle with better re-mils No. 15 Jaws 112 accorately machined, can't mar work. Only Write for Circular 2018



ORDER NOW! SEND COUPON TODAY!

CHICAGO TOOL & ENGINEERING CO., 8336 South Chicago Ave., Chicago 47, (II).

Enclosed				
Callery Co.				
C PAT MC	Intilla.	Holds-E'll		
₹ Send €	Politian		 	

NAME.	 _
ADDRESS	
from	

DO EVERY JOB better-faster-cheaper-COMPRESSED AIR

> Point Buildings, boats, tractors, trucks: refinish furniture and fenders; inflate tires; grease and lubricate motors, engines. implements. Destroy weeds. Rid hvestock, poultry and pens of peats with portable air power.

Free Literature explains relative advantages of 4-cylinder PRESSURE QUEEN and single-cylinder PRESSURE PRINCESS spray painting outfits. Tells how to save material, time and money by using the proper outfit at the right price.

> It is Yours For The Asking Write Today

THE CAMPBELL-HAUSFELD CO. 151 RAILROAD AVE.

DLECTRIC SHEAR SHARPENER Over 90,000 Sold—It Must Be Good

wheel ideal for shap of home use. Send remit takes with order and shipment will be made at ence, prepaid to your door com: wie e th electrickl goods estatogue

WILLIAM MARVY COMPANY, Dept. P11 479 M. Peter Street 34 Poul 2, Minn.



MAINTAINS STORE, BLUMBEATES AN CO.

Sand for Free V-(a) 32-page book "O)L FACTS" (with bong fide \$1 000 00 offer on page 30) G ves you complete "Reclaims ' slary and details of our matroordinary 90 DAY NO RISK TRIAL OFFER

U S. BUPEAU OF STAND-ARDS, Bul 86 Shores, "Oil does not wear out - mechanleally."

RECLAIMO MFG. CO., INC.

Dopt. P-11 5063 Eleton Avenue Chicago 30, Mineis Wrs. Schwatge, U.S. Pats. 1757223, 1834654, 2068473.

790 POPULAR SCIENCE

GET "New Car" POWE

Itop Burning Oil!



powerful new car performance and reduced oil consumption Old, tired engines may not need expen-sive overhauling. Only takes min-ties to apply-yet gives you 10 000 more miles of low-out driving pleasure **Satisfaction Guaranteed!**

Pull purchase price refunded im-mediately if not completely antig-fied. No solvent boths necessary Order today' Sorry no COD s. Proc information Dealer's inquire.

1786 S. CENTRAL, DEPT. PS-11 LOS ANGELES 11, CALIF.

FISHER'S

STRATEX SURVEYING Payther stages along tight, drowings form for soft or garpenymen. By it for soft to each visit you glass, but of a proper print you glass, but it posts proper print confidence od forth in push, member for it to mark man in push, member for it to mark man in push to the form and job fully garanteed \$3 cmb by COD or \$ 5 or it order on pay charges feether some instances 7000 per son in address the payth for the push of the push to the charge to the push of the Hand Level STRATER INSTRUMENT CO., INC. 18410 Hilliams Ark Las Angeles 37 Cold



SCREW STANFING AWL ATTACHMENT

Corposiciant est trans. Home A rad untern. In the handsed had ever builten in my for an even being account to the handsed had ever builten in my my ment of the hand we made to the hand with the same to the hand we made to had seen and the same to the sa

CRANDALL MEG. CO., Dupt. M-11. 7000 S. Western Ave., Las Angeles 47, Calif.

SMOKE - DRINK - LOAF - STUMBLE Bucause of A Week, Low-velt Electrical System

SELECT - A - CHARGE REGULATOR With EZ Adjustable Voltage Booster Switch SUPE CURE for ment brown generator requisitor

Free Datails - How you can get Solvet A Charge Regulator an your car for introducing.

SOX 2162-81 CLEVELAND 8, OHIO

TERRIFIC TOOL SAVINGS

Send for 80 page litustrated Catalog cram full of War Surplus Bargains in New Tools and accessories for home, workshop, hobbies and factory. exceptional values. Send 25c to cover handling charges to

COASTAL ABRASIVE & TOOL CO. NEW YORK LI N T

Trensformer Weider



\$35000 VALUES for Only \$85 # Belt driven motion and well contained

horter we dere at amost ng row prices. New en usive machines with FULL YEAR GI ARAWTEES. Sent on 10-DAY FREE TRIAL OFFER

SIG MONEY MAKERS Cash to on oday a fastest growing trade. Save maney datest your own welding For home shop, plant garage and farm!
Make mores stam earning hundreds
of extra do lars. These welders enoble
you to do better. faster, lawer cost work!

WRITE FOR FULL DETAILS and FREE CATALOG OF MOTOR BUYS plus other Electrical Bargaine

ROWERTS ELECTRIC CO., Dapt. 166, 849 W. Brund, Chicago 22

ILD YOUR OWN ARC WELDER C GENERATION

\$15.50 aged good read. or h light black 200 emps. 20 Votes, 200 to 4500 lt. P W. Or Brand New Price \$21,50 PRICE C. S. L. C. MC.

CONVIRTS TO ARE WILDER 240-214 AMP. iffiam oner bast tax tung tune maift.

Slock No. 711 D C Senerator E-1 Jack & Meints, rated 300 Amp, 10 Veite, Gov't cost \$ 100 00. Instructions for conversing \$27.50 RHEOSVAT # R-21 heavy duly recommended

the e general electric welder \$6.95 Carbon Pile GENERATOR VOLTAGE REGULATOR

Carbon Pile GENERATOR VOLUME REVOLUME. Also for the m in 31 or 23 Volt Dr. ferrecutors. Also recommended for the P-I and R-I type generators in ' isolal year ewo'' facts Flori \$6.95

Wydraelic Soleanid Cantral Valve

SENDEX. Mr. 81580. For remote yearput

nperk feet and to operate me single artion ar

death a action bydrae to extended with 34 V

157 Whit to 15th 1's I remoretions are 550°

-18th to 15th 1's I remoretions are 550°

-18th Applicable for 1.5 V A.f. Instruc
ness the attributed \$3.50 rs. 6.50 per

1. HI value

OF CO MOYOR & Volt DC Shart 1-36 in dia

OF CO MOYOR & Volt DC Shart 1-36 in dia It's long it to 5"h.f" Iwo mount \$2.95 post 3 2 H 2 HH 1872M Py ANTONSICS GRAME STRUCKS SEED SENON 5-1 or 10-1 butts 30 degree argan 54" up and 5 with 2 mounties helve \$5.95 [Add 50c d 2 ft P



rated 2 H P

CUNO OIL FILTER—Srand New Arrest , you Picters off without nariridge replacements dust lurg handle sent cartridge is clean Standard by in at and outlet ports o accommodate 14 gallons per minute STOP CHANGING DIL minute STOP Instructions \$4.95 Peint paid

BEAM POTATOR MOTOR New Powerful geared motor for TV perials Ham. FM
ere Cight weight rugged Shaft Speed
D R P M Yorque 75" tot 4 built in
mount og beachet For 24V D C & appricalise for 110V A C Instructions
oct Stock 2A331 57.50 \$50 (a) value

APPENDET STARTING MOTOR Operates to 72 to E volts to see high to-have alow speed and treesombless power. Applicative for an large of more line heavy tonds. Makes tiles, where or beavy duly For belt or direct drive. Mrg. by Jack A. C. Cost over 1300 to \$9.95 f.a.b. By S. Che. Struk willing \$9.95 f.a.b. He BIL

ECLIPSE MOTOR & GEAR UNIT Brand New Including 21V FC Motor Great ratio 5.1 can be adapted for 2.1 and a 20.1 ideal GARAGE DOUBLE OPENER HOIST PUMP JACK HAYLIST LAWN MOVER DRIVE DRIVE FOR POST Diffell, etc. Gent unit apel cuble for the A C Plagrama & Instructions me Gav't rest 4221 00 So agf a b. \$9.95 B Wit 25 Hoy On 5

PERCO CONTRIBUTE NEAVY OUTY Pump including built in motor to it P Applicable for 24V D C A C 110V A C The motor is explosion or Lilly prind constructed for greed in fuel, one, water, fue bonster etc 54" hose connection Rated espacity 400 G P H instructions tort Gov't cost "3 # Stack #469

PESCO LABGE VOLUME LITTLITY PUMP For Water, 041, imarciacides, etc. in-fasting outle to center and by pass value tapacity 4101 G P H 45" delve uplane shaft Ag' pipe inter and out bets Engineer by data \$7.50 Stock # 6001 only

PERCO OIL HYDRAULIC PUMP. Gene Type to the Pressure beast dust points lighted 227 Cm. In, Res. 236 in P. If. 15m P. 4. I Retailing either 4 certifus, Apr. south pool with couler spine 11 167 d absorber 12 Gov. 1 and over C. 20 fm. Data. \$6.05 Gor t

HYDEAUCIC PRESEURE GAUGE Brand New \$3.50 Pust Bange O to 2000 P S I tule Fitting Da 15

Stratopower Commune Displacement HEAVY DUTY PUMP

For operat he Bydraulte syltaders, to For operating mystalians, Saidances, Construction machinery, 2 ft trucks, Construction machinery, 2. () trucks, For fuel or of trucks, the large function is possible to the fuel of the fue

AIR OR OIL HYDRAULIC CYLINDERS Stock with thursday act on 12 m Bary, 6" Stroky 2y" Dis. shaft Capacity 1140 and shaft red, Capacity 1140 a. with 1000 P.S.L. Input. \$8.95 son so raine

Sinck x303-Double Artison 2" Bore, fittening 124", 124" Die, shant Overall ength shaft reinsted 22" Bis) the capacity with 1000 Pril gives 2000 hs, with our strategower Wt \$14.50 kC, Mo. 4 the strategower Wt \$14.50 kC, Mo. 5 toch No. 12 Hydrautic Cylinder Double Action output 12840 the, with 1000 P S 1 legat gives 17581 the with our STRATON WER PUMP 1400 P S 1 or will produce 34.50 Me. with 2001 in greature. Can also be aperated on law presents or seen. 4" Bore, 104.0" Strate, 1.5716" pile, Shart, circle Books, 25.50 ft Me. 1.4716 Vol. 1000 Co. 25.50 ft Me. LARGE VOLUME HYDRAULIC PRESSURE BEjustable to 8000 P. 8 1 \$4.95 post-

Four way my manue or column of yat we will be controlling I acture action or I ombite better at least or present on I cylinder & opens or inters than feat bandle control, and locks rylinders than feat bandle control, a op post a NC time eige ports, livand New 0.75 paid 5000 way Hybraulic control valve state with a doubt a property of the control of the cylinders. #520 For use with 2 doubts ac ion cylinders Each cy inder may be operated independently in in communication with 819 68 Post

TARGE VOLUME HYBRAULTE PRESSURE DE LIEF VALVE, SAMES 1250 to \$4.95 post-

BILLIVER BEMAND BAVORN REQULATOR fund on value 59.95 Sala 1 PURTPARE !

found a letterik with the other CO., SALVAGE St., Dept. 106 Kensus City, Mo.



SMOOTH DOWEL RODS introductors offer

Partpold To Your Goor, No Stomps or C. O. O. L.

1/4" to 1" Diameter—All 13" long—100 Ploces of Asserted Diemeters—All Hardwoods-Send Check or Manny Order.

Other sizes and lengths uvalishin

DOWELCRAFT, 1202 Burton S. E. Bopt, S.

IP TO \$40 A DAY IN TOUR OWN INSINESS. (any to start repool cook business of home with the Pr BELSAW - pherpotting and netting circular saves, granding planer and poster knows. Low Cost, only \$15 down

Shart to work the day year BELSAM arrives. He exrunce souled. Huntrale of jube in your neighbor

Sent fotay for Free Sent. , telime Security . BELSAW MACHINERY CO 4406 Frett Bidg Kansas City 11 Me.



Magnetic-

10 times the ordinary "pull"

4-in I Magas Tip Screwdriveralutes thagnet charges interchangeable hardened tool steel buts (stored in bandle) with 10 times the pull. Rolds slotted or Phillips head screws firmly for one hand placing and driving in hard-to-reach places. Not rold as hardware stores. Send check or money order for \$3.95. Money back if not ыныбеd.

MAGNA BRIVER CORPORATION 780 Washington St., Bullala 3, N. Y.



Any leveling job is a cinch with LEVELALL [t's For LEVFLALL is a 75' transparent plastic tube

with shut-off valves, mounting brackets and filled with a special anti-freeze liquid. And here's how it works; faiten tube brackets to forms, etc., anap open the valves and the liquid gives two accurately level points. The Job a level no doubt about it, it's as easy as hanging up your hat

Now, all alone, you can quickly level points for footings, forms, piping, batter boards, sills, lintels, floors, ceilings, roads, driveways, lawns and all types of construction work without a trainit

Send today for your free copy of "On the Level," a booklet that tells and shows how to use the LEVELALL better yet, order a Detuxe LEVFLALL. Clip and mail the handy coupon now! Money-back saturaction guaranteed. Dealer inquiries welcome.

Please send forme Detuke 1.5.	Webster St., Reckland, Mass. re booklet, "On the Level." [Mail VFI.ALL & \$12.95 [Regular 50" []Shap pompaid full price enclosed.
Name	
Street	
City [In Canada, pric INC., 5465 Dec	ZoneState_ es dightly higher; write LEVELALL, sine Blvd., Montreal, Que.

GIGANTIC STOCK



POWER PLANTS & GENERATORS

4 Laffith Plant 25 KW 115-7

60-c. 6-cyl. push batton start

Cost 04-011 51190 Fits.

60-c. 4-cyl. (814-00): \$808-80

60-c. 4-cyl. (814-00): \$808-80

60-c. 4-cyl. (814-00): \$808-80

@ Generator, 113-v, 60-c ball hearing b KW \$104 201 2 KW, \$129.60; 3 KW (115-230-0) \$194,50.

Hany others-write for estalog



WATER PUMPS IN THEY WATER Contribugal stabilizati stant 12 brunne impelier. s.haft bearing A.* \$15.5 \$29.65; 175* \$38.60 \$19.93

prim sig 30 gal Lg" 614,78; 34" 849.50; 319.50: priming 50 per vg 1° 428.80, • Setary Myles Soller, self priming \$50 ps) *3° \$46.25; \$4° \$24; 1° \$32.25; • Automatic Shatlaw Well System, 110** **Section 11 ibs. \$69.30

these quarter food reserve & pump are source to being for overs use, free air re and armoul

HYDRAULIC EQUIPMENT

diggers, presses etc. 8 Fump | 10 in part | 12 may | 400 | cpc; | 541 50 | 5 Cy | Index | 1 way | 1 mat | 1 may | 2 may | 2 may | 2 may | 3 Many other values. Send for externa

ORDER FROM AD, or Write for Big FREE Catalog!
OUR 30-YEAR POLICY: Everything Guarantees Satisfactory
We Pay Shipping Charges in U. E.



Assemble your own or buy e Delinte Air Mit. Everything but motor 1 cyl comp 42" 24 tank opray gun. 230gr 545 49 1-Cyl. Onep., 2 8 c/m 150 Pol

120 50 m Adj. Pressure Switch. BU pel Adj. Problem Regulator

O-250 pel 52 95 W Valve 51 95, 0 160 Lb. Gauge Air Tank :000 (b.) 10 135 58,79 a Dam, \$2.93. 0 Hew Com. \$1,39. 0-250 pai

おるな simplete truck are enterpie of SUPER CLOSEOUT BARGAINS Electric Delle, 15" (\$19.95: \$26.98 Electric Delle, 15" (\$19.95: \$26.98 Electric [ig 4;" flow (\$11.50) , \$9.95 Stanless Mee) 7 row weed agray \$129.90 Finest Gas Chate Saw \$234.20 Binecutary, Top (stally, Te50) \$42.95 Army Parts Wester (\$113) \$529.95 Engineer's Mand Lovel Engineer's Mand Lovel 15 84 Que Turnbackies 12' cable, to for 53 89 Rattery Charges 12" v 8 amp 512 95 Precision Stop Watch 512 95 Rattery Charges | 140 v H mmp | \$12 95 Precision Ston Watch | \$12 95 Tarpeulin S vi : Attest grass duels \$8 50 \$4 19 69.95 Mi Intermity Snot Light, 6 volt d Balays, sensus to 2 m n.

SPECIAL FOR THE

WESTERN ELECTRIC CITY TELEPHONES

· Granter W L. wall or desk temphone systems Laeful for private mor commun callen s) with, extension ringer, etc. Specify 'wall' or donk'. Original cost over \$20 Ob Prens d sale, \$4.99 each Two for



WINCHES . HOISTS . BLOCKS



e Beat, Farm, utility hand winch 1-4 four rates, 13 ff Ib.

Parm-Truck-Contractor beavy duty hand winch, 1-3 1-9 zer of 2001 the \$31.90 \$31 90 e Chain Helet (laver type)

anon 16. # 4" 5000 Ib. Smatch Block \$4.40 Plenible Cable 14", 144; 84", 184; 14". 23c per foot.

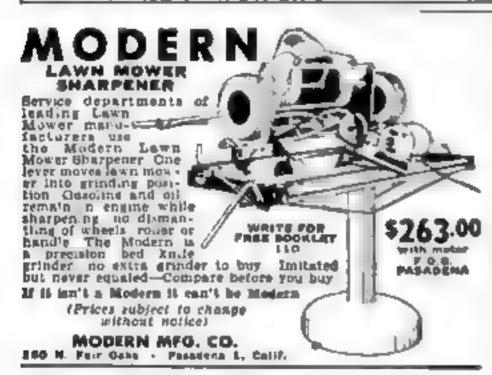
FREE

1000s of Items! Motors, sporting goods, hand and electric tools, citthing watches, binoculare tarps, search lights, etc., etc postcard or letter for your copy of free catalog today.

MOG

833 "O" ST.

LINCOLM, NEBRASKA



Take The "PAIN" Out of PAINTING







Furniture

LSE A BECKER Take It Anywhere!

No Compressor . . No Electric Cords Needed. Sprays: Paints, Oil, Varpishes

Insecticides, etc. Ment Wamen: Note a the easy way to lich those tough tedeous, liteto lich those tough traines, lies-lowe paint jobs. Becker foray Con-is for to use, requires no electricity or compressors—pressorized by low-cost CO-2 carridges each sprays up to 21 oz, containerful Used 2 years

meccessfully in industry SEE YOUR DEALER: If he cannot supply, order direct for papel, that Extra cartridges to for \$1. SULLIVAN-BECKER CO. Dept. 123 L. Kennaha, Win. Dept. 123 L

ONLY with beg ef 10 cottridges



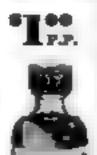
 ${f Print Your Own}$ Cards, Stationery, Advertising, aby erculars, photo and movie titles, church work tage ste. Bave money. Bold direct from fartery only Raised printing like engravg too Frint for Others, Good Crefft. Have a home print shop, Easy rules applied Pays for itself in a snort time. Write for free catmlog of outfits and all details. PRESSES, N-33 Muridan, Cons.

NTW TOOL POST GRINDERS REGULAR PRICE \$125.00 COURT DACK SPARAUSCE EDWARD J. NOEAN, PULASKI, NEW YORK

SILENCE IT WITH

Amazing NEW Lubricator

SAVE MANY DOLLARS ON REPAIRS



INSTANTLY BESTORES and LUBRICATES ALL MOVING PARTS-TV and Radio contacts. push buttons awitch contacts. theestate Quiete and inbricates e)ectric motors clocks savers. •
typewriters adding machines. • electric trains, etc.

THAT'S ALL! CONTACT a hydrocarbon colloidal suspension is forced into inaccessible places by capillary action. Does not affect inductance capacitance of resistance.

Rarmiess to precious metals. Cleans, forms a durable non-great non-sucky hard-bonded lubri-esting surface Complete with applicator and instructions. Satisfaction guaranteed or your money refunded.

SEND \$1,00 (check or cash) to

BEAVER LABORATORIES, Inc.

DROPS

Bas: 152. White Plains, N.Y.

EDITORS' IMPARTIAL TESTS PROVE:

New Self-Charging Battery Outlasts, Outperforms Others 221%

Afew months ago, we started producing a new battery which we frankly believe to be many years ahead of its time. When we announced that this new battery developed 15 amperes more power than other batteries and would automatically bounce back to life again and again after being deliberately and completely discharged, technical editors of leading magazines raised their eyebrows.

When we added that we had named it the Lifetime Battery because of its life (meaning exceptional power) and the time it would last (3 to 4 times as long as archaery batteries), and that we guaranteed it for six years, these editors were understandably doubtful, to put it mildly. One publisher, in fact, refused to accept advertising for this battery until what he then considered to be our extreme claims were carefully tested.

One of the editors said: "Let us test this battery, any way we see fit. If it does what you claim, it's news our readers will be interested in. If it's no good, our readers will be interested in that, too, and that's the way we'll write the story." We said "go ahead" and they took a standard Lifetime Battery off the production line and went to work

You may have read the result of the first test in a famous automotive magazine (name on request). Using two well-known hatterios (possibly the best-known high-quality batteries in the world). for comparison, they first ran the Lifetime Battery down completely and let it re-charge itself automatically. They repeated this test 43 times the first day, then compared its strength with the other two butteries. Results: the Lifetime Battery was 2045 stronger than the atrongest of the other two batteries. They discharged the Lifetime Battery another 20 times, allowing it to re-charge itself automatically each time, and compared all batteries again. the Lifetime Battery was now 2138 stronger than one battery, 221% stronger than the other! Next, they put a punishing 100-amp load on the Lifetime Battery; it survived that in good shape. So they repeated the selfrecharging test again and finally concluded "... unprecedented life expectancy . . . remarkable recuperative characteristics . . . outperformed the others in every respect and by a comfortable margin. an outstanding value.

The editor of another magazine (name on request) heard about the tests and asked to "give the thing a real test, one that would burn up the average bettery." We gave him the same bettery and challenged him to "finish it off." He installed it in his own car and drove the car on the bettery along, shifting gears as he would normally, until his "fingers were sore from holding the starter key I have to admit it, but I was outlasted by a battery."

Still another editor wrote: "... definite battery improvement ... greater recuperative power, greater initial output . obviously high quality."

During Independent tests in Alaska and the U.S., the Lifetime Battery was intentionally discharged under sub-freezing conditions, recharged itself automatically & started car at ance!



Engineered for Cold Climates

Soon after the Lifetime Battery went into production, we selected a few dealers in northern U.S. and Alaska, shipped them a few batteries and waited to see how the dealers and the public would react. Our Alaska dealer told us that before presenting it to his customers, he was going to give the battery an Arctic test: discharge it completely then freeze it at 30 below zero for 72 hours. Result the battery had recharged itself and immediately started the ear Immediately we received a telegraphed order from Alaska for \$6.043 worth of Lifetime Batteries!

6-Year Guarantee Saves You Up to \$107

The average deluxe battery lasts 1.4 years at a typical cost of \$25.00, or \$107.00 for a 6-year period. This arithmetic is making sense to people who are tired of throwing money away on batteries that just won't hold up. We believe it will make sense to you, too—particularly since the Lifetime Battery you buy now can easily be transferred to your new car whenever you trade in.

12-volt and 6-volt Available

Here's more arithmetic that makes sense, the Lifetime Battery sells in the U.S. at one price for all cars: \$29.95 for 6-volt. \$34.95 for 12-volt including excise tax.



Supply Limited: Order Today by Mail!

Although plant facilities are boing expanded, supply is still limited. If your dealer can't supply you, order direct by mail from the factory, we pay freight.

CONTINENTAL MANUFACTURING CORPORATION (Marketing Division, Consolidated Engineers) Dept. 5-11, Washington Boulevard at Motor Avenue, Culver City, California

Dealers NOW BEING APPOINTED TO HANDLE DEMAND

Dealerships are now being awarded to take care of demand generated by \$1,000,000 advertising cumpaign plus articles in national magazines. Write today for full information, including reprints of editors' tests and case histories from present dealers.

Washington Blv Please ship Lifeti	nefecturing Corporation, Dept. 3-11 d. at Motor Ave., Culver City, Colif. Ime Battery at once. \$29.95 including tax } \$34.95 including tax }
☐ I enclose shipping	\$5 deposit, will pay balance & shipping
NurseAddress	
City	Zone State



E BIG FOWER TOOLS IN ONE FACTORY TO YOU \$79.95

Only SUPERSHOP can offer you a complete precision-built workshop for \$16 per tool. 100% Ball Bearing, Lifetime accuracy. Rugged frame of heavy steel tubing. Handles big jobs, B" saw. Sold direct from factory to save you \$65.05. FREE trial. Easy pay plan. Free Catalog.

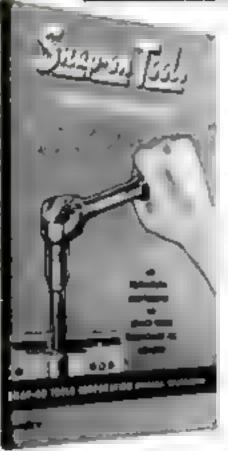


Write for PREE Catalog

POWER TOOLS INC.

253 YATES AVE. BELOIT, WISCONSIN

for FREE CATALOG



money-making **MECHANICS'**

It's easy to own the same "pay-off" tools used and endorsed by America's topearning mechanics throughout the automotive aviation and industrial fields! Snap-on toois he'p you bandle every repair job faster, easier, better And they LAST ... pay for themselves over and over again! Start building your own tool set now with basic Snap-on units -add others any time. Genuine Snap-on tools are never sold to stores -direct to users only Mail coupon lof liet causing

Snap-on Tools Corpora 8060-K28thAve., K		FIREN MECHANICS
Send me free cutulo		
Nome		
Address		
City	line .	State

WIZARD **** WOOD



With the lander PIG -- BRUTED STATES PLYWOOD COMP., NEW YORK 3

Danger, peks 24 G sterl Benvier ald to ours Cam socking mount on bench, truck or floor stand

braced steel finiteses cottect 501 d3 to \$26 5 : 30 T5 the \$3.5 ft 101 the \$1.5 ft size

48" 1 50 she \$48 to Portable stands 32" to 40 the especity 1d gauge, \$01 50 SHOOM GENOEM forms books and as typ. ets ore Ca-pacity Ug" & 2" 5 16" m 1 Ug" Ab. Steel. \$2.30 30 CURVE FORMER Forms straight and apering ploop

B' to 2 ft. in diameter 30 gauge supress of lock \$6.50 Observations desirery Order cash or C 42 ft. or sond too others

LE BRAKE CO., 3-2438 15 St., Denver 11, Colo.



AC or DC ELECTRIC WELDER 110 Volte

The "Little Murvel" all-metal welder, 5-year written guaranter Welds %" metal or money back Repairs turks, tools, fenders machine parts etc. Comshield, directions \$8 to plue 50c postage Finter torch as rode, unit eye

cessory for anidering cutting brazing \$3.85 complete with carbons, briss rods flux Borry no COD Buy direct and save ESSAY MFG, CO., Dept. 47, Quincy 69, Mass.



GOLD-SILVER-COI

Easily located with new Lightweight M-Scope Detecter Superior performance, lowest price, monthly payment

PART LIFEBATURE

FISHER RESEARCH LAB,, INC. PALO ALTO

BARRON Drill Press TOOLS



Over 40 precision built woodworking tools _Safety Shaper Cutters_Dovetall Cutters__ Large Auxiliary Metal Tables_All Metal Shaper Fences — Seindle Adapters — Handy Bench Visse, Many other Items Indispensable

for accurate, useful, versatile workshop use. Every tool sold on complate estidaction or your money back, See your Barren Dealer Ask for special forder - 24 Extra Uses for Your Drill Press."

Workshop Guida & Calalog

Oaly \$8.50

Planes - Rubbets

Tenens - Panals

Routs • Bavels

HARRON TOOL CO. INC. 366 Architects Bldg., Detroit 1, Blich.

CAR OWNERS-SAVE # 27500 A VEAR I GET 37-49 MIGS FROM ANY CAR

WORLD FAMOUS SPEED CHAMPS & AUTO ENGINEERS TELL HOW:

- . TO GO 15,000 MILES WITHOUT OIL CHANGE
- . GET 30 M.P.H. MORE TOP CAR SPEED
- GET 10,000 MORE MILES FROM YOUR TIRES

ALL MAKES! ALL MODELS! ALL YEARS!

HAME IT IS THE NEWHOLS. 1334 SPEED, POWER AND ECONOMY MANUAL

The most authoric complete and fully illustrated book of its type ever published is now available to all motorists. See for yourse (the quick easy stop by step photo plustrations that reveal the most amaking speed power and economy secrets of the tentury Learn how to overhau your chains in 1 hour get as much as 3.5 more many per gation with the twist of a screwdy yer.

expensive aports car look Cut engine friction and wear by more than dd with Auto-Mory-new MOI YB-DENUM additive to get high mileage

faster starts and increased about and power. Save hundreds of deliace on gas, or auto repairs and conemy producted

Photos and Diagrams Show Easy Step by Step Methods

This sensational new book with its POOL PACOF case to follow instructions is the same as has no the nation a best qualific lexperts actually abow you how Detailed draw rose and cutsway diagrams make every step along the walls a map a that anyone can understand even I you've



never held a screw driver L menhow to tenuriace evinder wal and sent in compression without removed one part from your engine Learn how

to automatically flash guet arbon and other combust on residuo out your exhaust pipe. Get special me hads for cotaining 'high test performance from regular gas. Stop engline overhisting and oil carlir dge reparement for a lifetime. This book contains handrods of morey saving high stand how to do it instructions such as how to convert a is opy late a seek speedster with pushbutton windows and doors, custom gril work in a satic top at only a few dollars total cost. If ow to save \$300 when selling your used dar.

The True Story on Where Your Gas Goest

At least the facts are recentled for a,) to prefewer how with the least of your wrist and
a in the use of each to get receive a so no
formation and age to get receive a so no
formation and the property and defense of
the ALL ALL STREAM OF THE THESE OF
MITTALE AND CONTROL OF THE THESE OF
MITTALE AND CONTROL OF THE THE SERVE
tends down't more transcare and lead to control the tense
how you can eas by paid up the receive her
thank to horsely ser in our chird se and show
the new 2000 of the former potential on your
reliable.
I down the former potential on your
reliable.
I do not be the former potential on your
reliable.
I do not be the former potential on your
reliable.
The heating of and

reclaimer design the safety of the tenders of and the the tenders the the treated growing that and rething the tenders the ten



Newhouse Automotive Industries, 5805 E. Beverly Bivd., Dept. 98, Les Angeles 22, Calif.

O DAY FREE TRIAL AT OUR EXPENSE!

ALAM. COUPON TODAY ... Special Office thing You & Books For The Proce Of the Three establic burdening described before thing \$2.50 values are young to been if you don't agree that the SPEAS & Points establish, the 3 gets benefits had don found benefits are the best \$1.55 value you've ever most ...; return Speed & Purse Bank for half column, on quanties, moked.

Only This Great Book Reveals All the Focial

Authorite in league speed and power ignoses and on their from the treate tracks and one window of weather that I will the are window of weather that I will the the treate the t

REPAIRS Cover from a man toping of and soap in Just 6 or his year of the course of the

WRITE TODAY!

Mail couper, now eyests offer gives you be said for the trace of 1 and 2 and be said a mailto and the base of 12 and 13 and 14 and 14 and 14 and 14 and 15 a

SEND Na MONEY
Mail Free Gift
Coupon Taday

the Response to some

37460

POWER

REGRESS

An orthogram

.00K!

DRAWINGS

PO TO

FREE CLUB

To Book Purchasors

waved many hundreds of deleast through clab bear do and privaces.

OR 11 AND 4 A A AND HEREIVE YOUR 4111 M ADDRESS OF AND PHYS CLEAR 4 BEEF DEFT H CERTIFIC ATEM AT ONCE



BOOKS

Three \$2.00 value leads are) cars to keep raise if you er turn the law Stored & Course Book

i repropry parvive all the propriet of selected economy bests and late protected Reg & cate !

2. High pit the part consensy products Reg & cate !

2. High pit (the base !

Followers A lists 1 000 leaded pares speed and recovery parts and accessories. /Reg.

2.e. value

3 F MOIS Haw BOOK zeros a fee the field me the er ret of how some strivers can and do get up to \$30 m a flee II value! SEND NO MONEY! MAIL FREE GIFT Caupan New! NEWHOUSE AUTOMOTIVE. Dept. 56 \$405 E. Beverly Bivd., Los Angeles 22, Calif.

Host me the Newholse S 110. POWER & ECONOMY HAN BOOK for NO HISK EXAMINATION, I agree to pay postman on archive & the plus posture. If not completely satisfied I will return it within 10 days for a fight refugal.

A so send me (RSO) TETA FIRE the 3 handbooks: Landony hards of High Performthree Equipment and the Famous flow Booklet. These I will keep as a Fift CIFT own of I return the dig Nown and Handon K. A so don't forget to include as Feogomy Club Mombership and FREE gift certificated.

Name (Piceso print in pencis)

Address

SAYF MOTE If any sent the sheemen, we pay all postage charges been more back Planauter

You'll Have Power Steering and Like It

[Continued from page 1, 3]

cut the switch a few times while making low-speed turns. Knowing how it feels makes it less scary.

One solution to the problem would be to build in a small hydraulic accumulator, like those in aircraft. Coupled with a pressure-loss signal, it would need to maintain service for only a few moments to keep a driver out of trouble. No doubt added cost and complexity are against it, but such an accumulator would undercut a cogent argument against ratio dropping.

It's reliable. Aside from the low-speed stall—a quirk that can hardly be blamed on the unit itself—power steering has earned a very good reputation for reli-

ability.

Broken belts or hose have proved surprisingly rare, considering that the system can involve three-hp, pump loads and 950-pound oil pressures. Maintenance doesn't amount to much—an occasional oil-level check, an infrequent hose replacement. Sometimes a unit will develop valve noise—a low hiss as you turn the wheel one way—or pump noise—a light knocking sound when you turn to full lock, the position of maximum pressure. Neither complaint is common with current units.

There appears to be no record of the kind of failure that could give a driver nightnares: a lunatic boost that cramps the wheel over hard while you're tooling along. A study of the valve circuits indicates that the chances of this seem astronomically remote—it would require a pyramiding of several highly improbable failures.

It's much more likely that your social security number will unlock the combination at Fort Knox.

Driving safety. Power steering may in total actually be safer than manual. It certainly helps your chances in two perilous situations: high-speed blowout of a front tire, and dropping the right-hand wheels off the pavement edge at high speed. In a blowout the chief hazard is the abrupt drag that can take the

wheel from the unwary driver; with power you have a strong hydraulic "lever" to keep this drag in check.

In the case where the right wheels are allowed to drop off the pavement, the peril lies in an inexpert attempt to force the car back without slowing down. This can set up an uncontrollable yaw. With both power or manual gear, the sensible thing is to slow down first, and then come back on at a sharp angle.

But with power steering, a driver can climb right back up with very little yaw—assuming, of course, that he's dumb enough to try.

This writer, qualified as to dumbness, has let both a Caddy and a Chrysler go off a three-inch concrete edge at 65 m.p.h., and experimentally tried to steer right back on. In each case the power-steered car climbed right back, with only a docile wiggle of her rear end. It is an experiment you might do well to take on faith,

Old-Fashioned Steam Has New Competitors

HEATING either a house or a chemical kettle used to call for one of the three classical "heat-transfer mecha", steam, water or air. But modern technology offers new choices:

Dowtherm A, made of diphenyl oxide and diphenyl, and amsole (methyoxybenzene), now serve as heat-carrying liquids and vapors in chemical plants, replacing hot water or steam.

Arochlor 1248, a "chlorinated biphenyl" that stays liquid at 400° to 550°, can be pumped through pipes without corroding them. Rivals include a chemical called tetraryl silicate, a fused-salt mixture known as Hitec and a phenolic compound, Hydrotherm 800.

Now familiar enough to have a nickname, "Nack," from its chemical formula NaK, is the liquid-metal alloy of sodium and potassium that carries heat from atomic reactors to boilers. For higher temperatures, a lead-bismuth alloy may be employed. A gaseous metal, mercury vapor, has been used instead of steam to drive turbines.

This One 3E7X-4HE-PDRC

EXTENSION CORD



Heavy duty. number of Buna rubber insulated = 14-2 con-d o e to r, atranded

cased in a treated braid jacket. So tough that you can drive ever it. Use indoors or out. Resists oil, grease or water. Extends electricity up in 400 ft. without voltage drap, Complete with heavy rubber plug and other. (Hem 16) 40 ft. (wt. 212 Hes.) Usually \$4.50 \$1.31 special.

100 ft. length () place) HEOPHENE EXTENSION CORD = 16, 2 conducto atransied wire, extremely flexible, bleaf for hedge triumners, fawn mowers, power tools, etc. Tough and rugged, withstands any abuse, toolstee with ruther plug and outlet. 40 ft. 11cm 17a) wt. 21 g B. Regularly 44, 03 sPh 1At. 83, 40 (ambiention 2-40 ft. 4) -20 ft. Intal 100 ft. (1tem 17n) \$3.05 (1tem 17r) heads (1 piece) (1tem 17r) \$3.05 (1tem 17r) \$3.05 (1tem 17r) \$3.00 (1tem 17r) \$3.0

NEOPRENE CASLS : 14-2 litem 185: Heavy duty, very flexible, 20 year quality, Wt. 9 lbs. 100 ft. complete with rubber plug and putlet. A terrific has at casts 10.00 NO. 12-2 POWER CASLS. Very flexible rubber everes, aperial putable shield for grassation power tools, etc. 50 ft. (Hend 100) wt. a lbs. 100 ft. (Hend 200) . \$12.05

37 Pc. SOCKET SET



Mighest quality, guaranteed non-breakable aschela markety Husky, fleastifully matched chrome alloy. Absolutely the least, Complete cause of 17 seckets from Us, then by "Us, drive, and 110" then 1-1/18" the drive, and 110" then 1-1/18" the drive, as extension, reversible hy, ratchet, adapter this similar thandle, "I handle, hy speeder, a pe, alloy combination wrench set, But a big deglective tool but. We chalienge aurone to make this value, Kastly worth 1-1/105, Wt. 14

The liters 50:

Cheen bible Same unroaditionally superatiteed, mea-breakable packets as showe-but with soline sizes, Coupter races of 21 sockets from 12" then 7/10" three 1-1/10" they drive. Two extensions, reversible the ratchet, I drift purches, alloing 12" head, all sogle coupling, 12" appeader, 24" breakover, 3 pc, high chrome alloy combination wrench set in big deschottse tool with ample room for other tools, lies, 640-50

Wt. 15 lb.

2 Pc. SOCKET 627

(Item 205) Contains a complete set of sockets in by drive, his allowersamy extensions, handles, spreaders, reversible ratchets, and the contains a complete set of sockets in by drive, his allowersamy extensions, handles, spreaders, reversible ratchets, etc., all uncond, guaranteed apaints breakage. Reactiful nutched chromed thin wall allow sockets in a stordy handles, spreaders, reversible ratchets, and the sockets in a stordy handles.

against breakage. Reautiful matched chromed thin wall allow aschela in a stordy hands some steel low. WL 17 lbs. I ist price \$13.00 \$27.55 \$27.95

JET FLOW BLOWER



Tremendous air CFM) and matel onconte infet 10" furbine blower unbeatable for heat-ing, cooling, dev-ing and air cooli-tioning, bleat for attic or barn ven-

gravity heating to forced air; appray booth exhausts, etc. One reates with any 14, 15 or 15 HP motor. Oversized, song the bearings. Includes variable

GET YOUR OWN ELECTRIC POWER AT DIRECT FACTORY PRICES



PORTABLE LIGHT PLANTS

Push Button Start A.C. LIGHT PLANT 600-700 watts-115 v.-60 cyc. A.C. Rowered by a rugged 2 hp. easy-starting Briggs gas engine. No witing necessary just plug in and operate. Picoty of current for any oil hurner, freezer, brooder, emergency lights, etc. which require up to 700 watts, ideal for tivil Defense, Pira Depts., Uniters and camps. Complete with Volumeter and built-to winding to enarge 6 v. auto batteries. Here 24, Wt. 75 Rs. Se prepared if war or sterm \$143.50 kneets and power lines. Heg. \$275 value. \$143.50

Dem 24) 700-800 Watt Plant Hem 4ds same as Item

GIANT 2000-2500 WATT PLANT 110-120 V. 60 c.c. A.C. Absolutely the best made common dynamically balanced armature; heary win ing, skill-mounted-portable. Powered by easy starting things o 6 hp. Wisconsin orgine symplete with all accessories; ongue easily discon-

Page Botton Start, 115-230 v. 60 evele A.C. A brute of a gover plant with a regreed 14 bp. Wisconsin americe. Plenty of electricity for ranges, water heaters, freezers, plants, markiners, etc. Affords teets 110 and 220 voits. Ideal where beavy current is needed, WL 500 ins. Easily worth 9005.00, with self \$645.00 tarrier. Partery price. \$585.00 canh Start. Item 1661.

Generalise and control best only, helt driven, Use your own control but tractor, Wt. 1345.00

DIESEL LIGHT PLANT

(Hern 1060) Diesel Master i 1-13 bw.
115/2:10 v. AC. Simile or 3 phase.
1800 time, stirect removing blee.
Self-starting, Engineered for permanent power where
the cost, beavy duty service is Important.
1350 Res. Reg. list \$3850.00. William price 1 1833.00 Factors price 2 1833.00 Factors price 2 1833.00 Factors price 3 1833.00 Factors price 2 1833.00 Factors 1 1833.00

Same plant with sice, self-starter. \$1145.00 We make fully automatic controls to merule any of the above light plants. Write for details. We make all sizes by to 25,000 Wasts.

HEATING & VENTILATING FAN



pipes. Fine all passes that to all passes the all passes of the passes o Вти Income duty rooter, [10-120v. AC. Mount in wall of reiling to LIDERRYS ventilate BINT

then the basity in-station in forness paper. Furres even

MASTER AIR COMPRESSOR (Hern 2029) High

pressure type for arge values of air for beavy duty service. For . paint soraying, inflation trick & auto tites, t to breating la for other jobs done by room-DFEGAINE TIME? ion type, 2" large compres-sor with built-in air filter. up to 500 Master built with high strength alloys and precision hearings, Standard steel lank, 12 v24", 2100 cu, in, rap. Heavy duty automatic switch starts and stors motor to maintain desired pres-sure (up to 150 fb.). Has theck valve, safety valve, gauge, shut-off valve, 20 ft, air bose and tire chuck, Beauti-fully balanced on ball bearing wheels

Quint, somer efficient for moves hurs

FLEXIBLE SHAFT instit, bravy duty tool with amazing resolutity. Replaces a descent individual tools—drills, buffs, grinds, samis, sams — handles jobs to impossible places. Fits any 5." issuer shall or use with drill incess, grinder, latise, gas on gine, cir. Heavy duty ba plane wire core excased in tough cuts for bousing. Handle and arbor have ranged to toustrial type prerising hall bearings for years of service. Arbor takes all by bors wire wheels, grindstones, etc. 15-20 standard threads. Use rising half bearings for tor W: 10 lbs. \$15.95

\$109.50 With the bp. mostor, flex. \$129.50 \$199.30 (Hern 200Ap) \$129.50 2 hp. Briggs Gas Engine, Mos. \$119.50

MASTER GARDENER



retary H'e. a.

IP's a retary

Where can you get a power tost that does so many jotal works for you the year 'round, lions terrific no of cleaning arrow (nom walks, drives, etc. wathout backt, eaking work. Also petparce drep mellow need bads, cuts weeks, issue, etc. The Master Gardener performs botte sches more than tractors costing twice as moreh. Convertain nomutes to Tiller, Power Sickle, etc. Basic, suif-propelled 2 hp, tractor, Brigger \$119.50 or Chinten course. \$119.50 Cuttystor. Cultivator Botary Tiller Disc Harrow Forewing Tool Botary Lawn Mower .. suchie Par M retaint prepaid to most areas

(Blem 21)

tittem fål

Ottom tenne

HEAVY DUTY D-C ARC WELDER



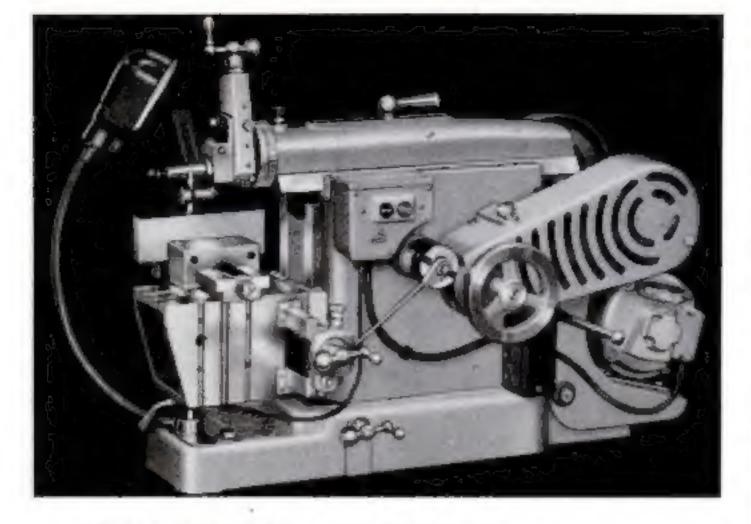
Or shop wetder. Up to hon series. Made for years of trou-tie-free, continu-ous serv-ice, Will ice. Will handle light of

TO CHARLETTE PROF rhoustat for low heat sobberton eraring, well WELDING RIV. Two 10 ft. isnote, welding belinet, etectrois bolder, ground clamp. Sold only with \$10.50
Write for prices on A.C. Are \$10.50 prices on A.C. Are Webstern,



Now! a portable, ranged, self-powered industrial type welder with terrific performance, jet at a price bundreds of dollars tosa than puri'd report. High repact-ty DC welding unit enables you to DC welding unit enables you to techie any job with confidence—cassly hardles anything up to 2" plate using from 1 / 10" to 12" rods. Built in stabilities and disal control simplifies any welding job from 10 to 250 kmps. Welder to powered by 14 MP 2 cylinder air cooled Wisconsin industrial engine with triple V-belt drive. Mounted up a welden steel shows courty transported on trailer of pick-op track. Ideal for along factory or farm welding. Complete with instructions and guarantee. W. 480 The Compares with welder costing \$1250. (Here 280)

and monther Sund check or M.O. Prices Lu.b. Factory. 10 day Money back quarantee. Send 10c for 816 Catalog. Burlington, Wis. MASTER MECHANIC MFG. CO., DEPT. 620



SOUTH BEND 7" PRECISION SHAPER

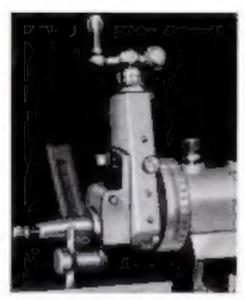
Precision engineered and sturdily constructed, this compact bench shaper has the built-in accuracy and rigidity for rapid machining on small parts. The stroke rate per minute is higher than for larger shapers, permitting greater production on work within its capacity. The ease of setting up work in the bench shaper, its high operating speeds, and low power consumption keep costs at a minimum. A number of practical attachments can be supplied to increase its versatility on toolroom, production, or maintenance work. Check coupon for literature,

SPECIFICATIONS: RAM - Stroke length - 0 to 7". Strokes per minute (4)-42 to 195. Cutting speeds-3 to 114 feet per minute.

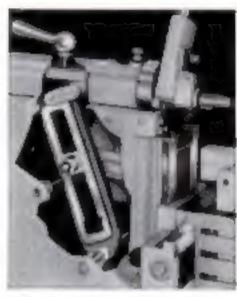
TOOL HEAD-Vertical feed-3". Swivels-360". Tool post opening-13/32" x 7/8".

TABLE—Horizontal travel—9 1/2". Vertical travel—5". Power cross feeds (6)-.002 to .012". Rom degrance-1/2 to 5-1/2". Table size-5-3/8 x 5 x 6-5/16".

VISE—Jaw width—4". Jaw depth—1". Maximum opening—4". Swivel base.



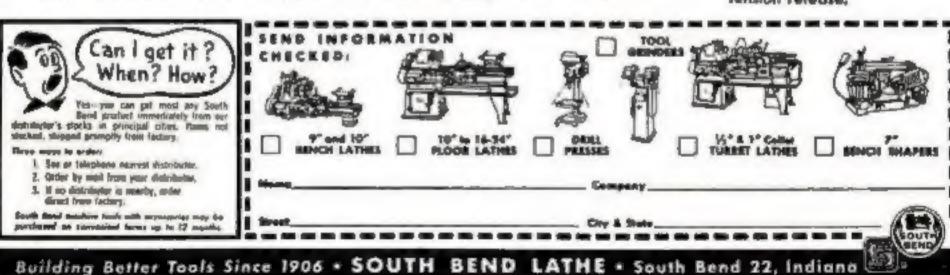
Tool head locks in any position. Rugged clapper box is adjustable.



Rocker and crank with graduated eccentric adjustment for stroke.



Guards on all pulleys and belts. Quick-acting belt tension release.





CHRISTMAS WONDERFUL

Here at Inst-the all NEW, improved italy binory hers with the famous \$N, to Kiaroptar lenses now better than ever before. They're more refined, sharper, clearer, I ways better than the sensational 1952 imodel? When we announced the 32 model we were swamped with over 20,000 orders. We were sold out and forced to look up thousands of orders. Unfortunately, we disappointed lots of nice folks! This time we're taking an chances! We're strictly limiting orders to ONE 1854 model per family and will sell NONE to dealers!

Kigrapiar Lenses Are Precision Made!

The secret of ROTHLAR'S great public acceptance is the precision made ax, to lenses. Unlike other girases, they are not assolded or stamped out on plastic presses. These new 1934 genuine Klaropter ienses are grand out ONE BY ONE by proud German optical workers! This takes much more time and fimile production, BUT WHAT A DIFFERENCE! This latest model gives you sturper, clearer, mugic like viewlur. No autroping distortions! No chromatic fringe to cause eyestrain! At I. Klaroptar tenses are turned out under the supervision of WAL



TER ROTH in his small factory in Hartnes author, Western Germany, He has the Old World family pride, Herr Roth simply won't let an inferior product bear his name. Naturally this means you get a really superior binocular if you are one of the lucky people to order this optical instrument!

BIG SIZE! BIG POWER! BIG VALUE!

Don't confuse ROTH-KLAROPTAR BINOCULARS with cheap, crudely made Japanese binoculars selling from \$2 to \$4. This is NOT a toy! Quality made throughout, Smooth arnehronized CENTER focusing. Construction is rugged yet they're Littell asy to carry in their weather-protected case! The lenses are

made with the same care us in the binoculars! NOW less a pair DIRECT FROM THE IMPORTER at the unbelievable low price of 2.00 while they fast! Mall special Reply Part now!

THORESEN'S

352 Fourth Avenue, Dept. 7-X, New York 10, N. Y.



PRESTONEANT

BRAND

The terms "Prestone", "Prime" and "Everendy" are trade marks of Union Carbide and Carbon Corporation

NATIONAL CARBON COMPANY - A Division of Union Carbide and Carbon Corporation - 30 East 42nd St., New York 27, N.Y.